

WEBVTT

NOTE duration: "01:28:12.587"

NOTE Confidence: 0.91191775

00:00:00.240 --> 00:00:02.020 Biomedical ethics seminar.

NOTE Confidence: 0.9626441

00:00:03.360 --> 00:00:03.860 We're,

NOTE Confidence: 0.9982773

00:00:05.200 --> 00:00:07.700 very fortunate to have a,

NOTE Confidence: 0.97910345

00:00:08.160 --> 00:00:09.780 you know, a real star

NOTE Confidence: 0.97910345

00:00:09.840 --> 00:00:11.139 of academic medicine,

NOTE Confidence: 0.96687055

00:00:12.320 --> 00:00:13.540 bioethics, and sociology

NOTE Confidence: 0.8758697

00:00:13.840 --> 00:00:15.120 today. And and really one

NOTE Confidence: 0.8758697

00:00:15.120 --> 00:00:16.355 of my personal

NOTE Confidence: 0.9179158

00:00:17.055 --> 00:00:17.954 research heroes.

NOTE Confidence: 0.9447316

00:00:20.575 --> 00:00:22.675 Nicholas Christakis is a sociologist

NOTE Confidence: 0.9447316

00:00:22.895 --> 00:00:24.575 and a palliative care physician

NOTE Confidence: 0.9447316

00:00:24.575 --> 00:00:25.855 who directs the human nature

NOTE Confidence: 0.9447316

00:00:25.855 --> 00:00:27.535 lab within the Yale Institute

NOTE Confidence: 0.9447316

00:00:27.535 --> 00:00:28.755 for network science.

NOTE Confidence: 0.987783

00:00:29.530 --> 00:00:31.290 His his current research focuses
NOTE Confidence: 0.987783

00:00:31.290 --> 00:00:32.810 on the social, mathematical, and
NOTE Confidence: 0.987783

00:00:32.810 --> 00:00:33.950 biological rules
NOTE Confidence: 0.9685374

00:00:34.490 --> 00:00:36.510 governing how social networks form
NOTE Confidence: 0.9685374

00:00:36.810 --> 00:00:37.690 as well as the social
NOTE Confidence: 0.9685374

00:00:37.690 --> 00:00:39.370 and biological implications of how
NOTE Confidence: 0.9685374

00:00:39.370 --> 00:00:41.790 social networks influence thoughts, feelings,
NOTE Confidence: 0.9685374

00:00:41.850 --> 00:00:42.510 and behavior.
NOTE Confidence: 0.94950306

00:00:44.265 --> 00:00:45.705 The author of, four books
NOTE Confidence: 0.94950306

00:00:45.705 --> 00:00:46.745 and over two hundred articles,
NOTE Confidence: 0.94950306

00:00:46.745 --> 00:00:48.025 doctor Kruskas was elected to
NOTE Confidence: 0.94950306

00:00:48.025 --> 00:00:49.625 the Institute of Medicine, the
NOTE Confidence: 0.94950306

00:00:49.625 --> 00:00:50.985 National Academy of Sciences, and
NOTE Confidence: 0.94950306

00:00:50.985 --> 00:00:51.864 is a fellow with the
NOTE Confidence: 0.94950306

00:00:51.864 --> 00:00:53.405 American Association for the Advancement
NOTE Confidence: 0.94950306

00:00:53.465 --> 00:00:54.665 of Science and the American

NOTE Confidence: 0.94950306
00:00:54.665 --> 00:00:56.125 Academy of Arts and Sciences.
NOTE Confidence: 0.94133615
00:00:57.060 --> 00:00:58.100 I would just say on
NOTE Confidence: 0.94133615
00:00:58.100 --> 00:00:58.760 a, personal
NOTE Confidence: 0.9815346
00:01:01.460 --> 00:01:01.960 perspective,
NOTE Confidence: 0.90176636
00:01:02.340 --> 00:01:03.780 doctor Krzyszka has been a
NOTE Confidence: 0.90176636
00:01:03.780 --> 00:01:05.220 researcher of mine going back
NOTE Confidence: 0.90176636
00:01:05.220 --> 00:01:06.600 to to medical school.
NOTE Confidence: 0.91803515
00:01:08.020 --> 00:01:10.145 His ground breaking work showing
NOTE Confidence: 0.91803515
00:01:10.145 --> 00:01:12.164 that smoking behaviors and obesity
NOTE Confidence: 0.91803515
00:01:12.384 --> 00:01:13.844 transmit through social networks
NOTE Confidence: 0.94927406
00:01:14.465 --> 00:01:15.424 is really an it's an
NOTE Confidence: 0.94927406
00:01:15.424 --> 00:01:16.465 example of the kind of
NOTE Confidence: 0.94927406
00:01:16.465 --> 00:01:17.444 elegant science
NOTE Confidence: 0.9782047
00:01:17.905 --> 00:01:19.424 that seems self evident in
NOTE Confidence: 0.9782047
00:01:19.424 --> 00:01:21.744 retrospect and yet radically changes
NOTE Confidence: 0.9782047

00:01:21.744 --> 00:01:23.045 our perspective and enhances
NOTE Confidence: 0.9803024

00:01:23.520 --> 00:01:24.959 our understanding of an important
NOTE Confidence: 0.9803024

00:01:24.959 --> 00:01:26.159 aspect of the world. It
NOTE Confidence: 0.9803024

00:01:26.159 --> 00:01:27.280 was really an inspiration to
NOTE Confidence: 0.9803024

00:01:27.280 --> 00:01:27.920 me when I was a
NOTE Confidence: 0.9803024

00:01:27.920 --> 00:01:28.740 medical student,
NOTE Confidence: 0.9986177

00:01:29.040 --> 00:01:30.640 and I'm I'm just beyond
NOTE Confidence: 0.9986177

00:01:30.640 --> 00:01:31.700 thrilled to,
NOTE Confidence: 0.99619454

00:01:32.720 --> 00:01:33.600 to have him here with
NOTE Confidence: 0.99619454

00:01:33.600 --> 00:01:34.959 us in in person today.
NOTE Confidence: 0.99619454

00:01:34.959 --> 00:01:36.000 So thank you so much.
NOTE Confidence: 0.99619454

00:01:36.000 --> 00:01:37.220 Thank you so much.
NOTE Confidence: 0.9882449

00:01:40.444 --> 00:01:41.725 Thank thank you so much
NOTE Confidence: 0.9882449

00:01:41.725 --> 00:01:42.845 for that introduction, and thank
NOTE Confidence: 0.9882449

00:01:42.845 --> 00:01:43.725 you for having me. I
NOTE Confidence: 0.9882449

00:01:43.725 --> 00:01:44.685 don't know the norms of

NOTE Confidence: 0.9882449

00:01:44.685 --> 00:01:45.725 this community, so I think

NOTE Confidence: 0.9882449

00:01:45.725 --> 00:01:46.444 we have an hour and

NOTE Confidence: 0.9882449

00:01:46.444 --> 00:01:47.485 a half. Is that right?

NOTE Confidence: 0.9882449

00:01:47.485 --> 00:01:48.365 We have an hour and

NOTE Confidence: 0.9882449

00:01:48.365 --> 00:01:49.485 a half. We would like

NOTE Confidence: 0.9882449

00:01:49.485 --> 00:01:50.145 to reserve

NOTE Confidence: 0.9273844

00:01:50.525 --> 00:01:51.885 at least twenty minutes. Yeah.

NOTE Confidence: 0.9273844

00:01:51.885 --> 00:01:53.910 That's easily question there. Yeah.

NOTE Confidence: 0.9273844

00:01:53.910 --> 00:01:54.870 So the question is, should

NOTE Confidence: 0.9273844

00:01:54.870 --> 00:01:55.830 we do this University of

NOTE Confidence: 0.9273844

00:01:55.830 --> 00:01:56.730 Chicago style,

NOTE Confidence: 0.94259095

00:01:57.030 --> 00:01:57.830 which is you would just

NOTE Confidence: 0.94259095

00:01:57.830 --> 00:01:59.130 start asking questions immediately,

NOTE Confidence: 0.9640727

00:02:00.070 --> 00:02:01.510 which I'm very happy with.

NOTE Confidence: 0.9640727

00:02:01.510 --> 00:02:02.230 I'm happy to do it

NOTE Confidence: 0.9640727

00:02:02.230 --> 00:02:02.870 that way. So if you
NOTE Confidence: 0.9640727

00:02:02.870 --> 00:02:04.070 wanna just interrupt at some
NOTE Confidence: 0.9640727

00:02:04.070 --> 00:02:04.790 point, we have plenty of
NOTE Confidence: 0.9640727

00:02:04.790 --> 00:02:05.990 time. I've got fifty minutes
NOTE Confidence: 0.9640727

00:02:05.990 --> 00:02:07.125 of remarks. So we can
NOTE Confidence: 0.9640727

00:02:07.125 --> 00:02:08.004 do that style or you
NOTE Confidence: 0.9640727

00:02:08.004 --> 00:02:08.885 just let me go and
NOTE Confidence: 0.9640727

00:02:08.885 --> 00:02:10.405 then until I run out
NOTE Confidence: 0.9640727

00:02:10.405 --> 00:02:11.285 of steam, and then we
NOTE Confidence: 0.9640727

00:02:11.285 --> 00:02:12.245 can talk as long as
NOTE Confidence: 0.9640727

00:02:12.245 --> 00:02:12.905 you want.
NOTE Confidence: 0.9787381

00:02:13.285 --> 00:02:14.405 So, so thank you for
NOTE Confidence: 0.9787381

00:02:14.405 --> 00:02:15.364 the introduction. It's nice to
NOTE Confidence: 0.9787381

00:02:15.364 --> 00:02:16.084 be back here. I I
NOTE Confidence: 0.9787381

00:02:16.084 --> 00:02:17.125 come to the medical school,
NOTE Confidence: 0.9787381

00:02:17.125 --> 00:02:18.644 not uncommonly, but it's been

NOTE Confidence: 0.9787381
00:02:18.644 --> 00:02:19.364 a while since I've been
NOTE Confidence: 0.9787381
00:02:19.364 --> 00:02:20.100 in this room.
NOTE Confidence: 0.9001336
00:02:20.740 --> 00:02:22.280 So for for too long
NOTE Confidence: 0.9001336
00:02:22.340 --> 00:02:23.240 in my view,
NOTE Confidence: 0.99970067
00:02:23.620 --> 00:02:24.280 the scientific
NOTE Confidence: 0.98354083
00:02:24.580 --> 00:02:26.020 community and the person on
NOTE Confidence: 0.98354083
00:02:26.020 --> 00:02:27.400 the street for that matter
NOTE Confidence: 0.98354083
00:02:27.540 --> 00:02:28.980 has been focused on the
NOTE Confidence: 0.98354083
00:02:28.980 --> 00:02:30.680 dark side of our evolutionary
NOTE Confidence: 0.9623043
00:02:30.980 --> 00:02:33.139 heritage, on our capacity for
NOTE Confidence: 0.9623043
00:02:33.139 --> 00:02:33.639 selfishness
NOTE Confidence: 0.89570284
00:02:34.180 --> 00:02:35.000 and mendacity
NOTE Confidence: 0.9995182
00:02:35.855 --> 00:02:36.675 and tribalism
NOTE Confidence: 0.9925589
00:02:37.455 --> 00:02:38.275 and cruelty
NOTE Confidence: 0.936785
00:02:38.735 --> 00:02:39.555 and violence.
NOTE Confidence: 0.9971858

00:02:40.335 --> 00:02:41.215 But I think that the
NOTE Confidence: 0.9971858

00:02:41.215 --> 00:02:43.055 bright side has been denied
NOTE Confidence: 0.9971858

00:02:43.055 --> 00:02:44.355 the attention it deserves
NOTE Confidence: 0.9284091

00:02:44.815 --> 00:02:46.655 because our species also evolved
NOTE Confidence: 0.9284091

00:02:46.655 --> 00:02:47.475 to be good
NOTE Confidence: 0.9997705

00:02:47.810 --> 00:02:49.750 and to manifest wonderful qualities
NOTE Confidence: 0.56473744

00:02:50.209 --> 00:02:50.709 like
NOTE Confidence: 0.892148

00:02:51.010 --> 00:02:51.989 love and friendship
NOTE Confidence: 0.98319507

00:02:52.450 --> 00:02:53.190 and cooperation
NOTE Confidence: 0.9578905

00:02:53.810 --> 00:02:54.629 and teaching.
NOTE Confidence: 0.99228394

00:02:55.169 --> 00:02:57.010 And these good qualities must,
NOTE Confidence: 0.99228394

00:02:57.010 --> 00:02:58.790 in my view, have outweighed
NOTE Confidence: 0.99228394

00:02:58.930 --> 00:02:59.909 the bad qualities
NOTE Confidence: 0.9496924

00:03:00.209 --> 00:03:01.330 or we wouldn't be living
NOTE Confidence: 0.9496924

00:03:01.330 --> 00:03:02.790 socially in the first place.
NOTE Confidence: 0.97558844

00:03:03.385 --> 00:03:04.425 Every time I came near

NOTE Confidence: 0.97558844

00:03:04.425 --> 00:03:05.705 you, you stole from me,

NOTE Confidence: 0.97558844

00:03:05.705 --> 00:03:06.665 or you filled me with

NOTE Confidence: 0.97558844

00:03:06.665 --> 00:03:07.705 lives, or you beat me,

NOTE Confidence: 0.97558844

00:03:07.705 --> 00:03:08.905 or you killed me. I

NOTE Confidence: 0.97558844

00:03:08.905 --> 00:03:09.785 would be better off we

NOTE Confidence: 0.97558844

00:03:09.785 --> 00:03:10.585 would all be better off

NOTE Confidence: 0.97558844

00:03:10.585 --> 00:03:11.405 living atomistically.

NOTE Confidence: 0.9545574

00:03:11.785 --> 00:03:12.665 Of course, we don't do

NOTE Confidence: 0.9545574

00:03:12.665 --> 00:03:14.264 that. We live socially, which

NOTE Confidence: 0.9545574

00:03:14.264 --> 00:03:15.945 means necessarily in my view

NOTE Confidence: 0.9545574

00:03:15.945 --> 00:03:16.985 that the benefits of a

NOTE Confidence: 0.9545574

00:03:16.985 --> 00:03:18.739 connected life must have outweighed

NOTE Confidence: 0.9545574

00:03:18.799 --> 00:03:19.459 the costs.

NOTE Confidence: 0.9768516

00:03:20.560 --> 00:03:22.239 And indeed, our species has

NOTE Confidence: 0.9768516

00:03:22.239 --> 00:03:24.159 evolved to a particular kind

NOTE Confidence: 0.9768516

00:03:24.159 --> 00:03:25.760 of good society, as I'm
NOTE Confidence: 0.9768516

00:03:25.760 --> 00:03:26.879 gonna try to persuade you
NOTE Confidence: 0.9768516

00:03:26.879 --> 00:03:27.379 today.
NOTE Confidence: 0.95565665

00:03:28.319 --> 00:03:29.700 Now we humans evolved
NOTE Confidence: 0.9681358

00:03:30.125 --> 00:03:31.325 not only to live in
NOTE Confidence: 0.9681358

00:03:31.325 --> 00:03:33.825 groups like herds of, zebras
NOTE Confidence: 0.9681358

00:03:33.965 --> 00:03:35.265 or groups of crocodiles,
NOTE Confidence: 0.8806477

00:03:35.805 --> 00:03:37.025 but also socially.
NOTE Confidence: 0.921543

00:03:37.405 --> 00:03:38.605 And in a very particular
NOTE Confidence: 0.921543

00:03:38.605 --> 00:03:40.924 way socially, actually, equipped equipped
NOTE Confidence: 0.921543

00:03:40.924 --> 00:03:42.545 with a very particular set
NOTE Confidence: 0.921543

00:03:42.605 --> 00:03:43.984 of innate capabilities.
NOTE Confidence: 0.9996463

00:03:44.840 --> 00:03:46.220 And we have very specific
NOTE Confidence: 0.9996463

00:03:46.519 --> 00:03:47.900 sorts of social
NOTE Confidence: 0.90346336

00:03:48.200 --> 00:03:48.700 interactions.
NOTE Confidence: 0.92452615

00:03:49.720 --> 00:03:51.159 And we manifest this social

NOTE Confidence: 0.92452615

00:03:51.159 --> 00:03:51.659 ability

NOTE Confidence: 0.98791933

00:03:52.120 --> 00:03:52.939 very early,

NOTE Confidence: 0.99960285

00:03:53.400 --> 00:03:54.140 in life.

NOTE Confidence: 0.9982914

00:03:54.599 --> 00:03:55.959 Many people have argued, for

NOTE Confidence: 0.9982914

00:03:55.959 --> 00:03:57.079 example, that one of the

NOTE Confidence: 0.9982914

00:03:57.079 --> 00:03:59.400 primary functions of play in

NOTE Confidence: 0.9982914

00:03:59.400 --> 00:03:59.900 childhood

NOTE Confidence: 0.9601971

00:04:00.275 --> 00:04:01.395 is to prepare us for

NOTE Confidence: 0.9601971

00:04:01.395 --> 00:04:03.155 living socially. There's actually quite

NOTE Confidence: 0.9601971

00:04:03.155 --> 00:04:04.915 an interesting literature on play

NOTE Confidence: 0.9601971

00:04:04.915 --> 00:04:06.035 in children and in other

NOTE Confidence: 0.9601971

00:04:06.035 --> 00:04:08.115 primates and other social animals,

NOTE Confidence: 0.9601971

00:04:08.115 --> 00:04:08.835 and that one of the

NOTE Confidence: 0.9601971

00:04:08.835 --> 00:04:10.775 functions of this innate inclination

NOTE Confidence: 0.9601971

00:04:10.915 --> 00:04:12.240 of the youngest of ours

NOTE Confidence: 0.9601971

00:04:12.560 --> 00:04:14.240 to play with each other.
NOTE Confidence: 0.9601971

00:04:14.240 --> 00:04:14.960 Some of you may even
NOTE Confidence: 0.9601971

00:04:14.960 --> 00:04:16.419 know the expression homo ludens
NOTE Confidence: 0.9601971

00:04:16.480 --> 00:04:18.560 or playful person or the
NOTE Confidence: 0.9601971

00:04:18.560 --> 00:04:20.240 people or the primate that
NOTE Confidence: 0.9601971

00:04:20.240 --> 00:04:20.740 plays,
NOTE Confidence: 0.95472544

00:04:21.440 --> 00:04:22.640 you know, that that that
NOTE Confidence: 0.95472544

00:04:22.640 --> 00:04:23.920 this is the reason that
NOTE Confidence: 0.95472544

00:04:23.920 --> 00:04:25.279 we play is so to
NOTE Confidence: 0.95472544

00:04:25.279 --> 00:04:26.660 practice for living socially.
NOTE Confidence: 0.9629055

00:04:28.125 --> 00:04:29.245 So the question is what
NOTE Confidence: 0.9629055

00:04:29.245 --> 00:04:30.525 kind of evidence might we
NOTE Confidence: 0.9629055

00:04:30.525 --> 00:04:31.505 use to ascertain
NOTE Confidence: 0.9580986

00:04:32.205 --> 00:04:33.825 the kind of social order
NOTE Confidence: 0.9580986

00:04:34.125 --> 00:04:36.125 humans are universally predisposed to
NOTE Confidence: 0.9580986

00:04:36.125 --> 00:04:37.565 make and that in some

NOTE Confidence: 0.9580986

00:04:37.565 --> 00:04:39.665 sense comes naturally to us?

NOTE Confidence: 0.99394214

00:04:40.009 --> 00:04:40.810 Now, if you were a

NOTE Confidence: 0.99394214

00:04:40.810 --> 00:04:42.250 mad scientist, the kind of

NOTE Confidence: 0.99394214

00:04:42.250 --> 00:04:43.370 experiment you would love to

NOTE Confidence: 0.99394214

00:04:43.370 --> 00:04:45.050 do would be to somehow

NOTE Confidence: 0.99394214

00:04:45.050 --> 00:04:46.350 take a group of newborn

NOTE Confidence: 0.99394214

00:04:46.490 --> 00:04:46.990 infants

NOTE Confidence: 0.9737252

00:04:47.449 --> 00:04:48.570 and abandon them on an

NOTE Confidence: 0.9737252

00:04:48.570 --> 00:04:50.729 island and contrive to have

NOTE Confidence: 0.9737252

00:04:50.729 --> 00:04:52.750 them be raised aculturally

NOTE Confidence: 0.97851205

00:04:53.289 --> 00:04:54.570 and with no social exposure,

NOTE Confidence: 0.97851205

00:04:54.570 --> 00:04:56.475 but still somehow grow to

NOTE Confidence: 0.97851205

00:04:56.475 --> 00:04:58.475 adulthood safely, provisioning them with

NOTE Confidence: 0.97851205

00:04:58.475 --> 00:04:59.615 all necessary resources,

NOTE Confidence: 0.99441516

00:04:59.995 --> 00:05:00.875 and then come back, you

NOTE Confidence: 0.99441516

00:05:00.875 --> 00:05:02.555 know, twenty years later and
NOTE Confidence: 0.99441516

00:05:02.555 --> 00:05:03.995 see what kind of social
NOTE Confidence: 0.99441516

00:05:03.995 --> 00:05:04.495 order,
NOTE Confidence: 0.9667224

00:05:05.275 --> 00:05:07.435 did those those animals, those
NOTE Confidence: 0.9667224

00:05:07.435 --> 00:05:07.935 humans,
NOTE Confidence: 0.96415186

00:05:08.395 --> 00:05:08.895 build,
NOTE Confidence: 0.93201256

00:05:09.275 --> 00:05:10.014 for themselves.
NOTE Confidence: 0.991998

00:05:11.220 --> 00:05:12.339 And the question would be,
NOTE Confidence: 0.991998

00:05:12.339 --> 00:05:13.400 would they actually
NOTE Confidence: 0.979974

00:05:13.860 --> 00:05:14.979 build a kind of social
NOTE Confidence: 0.979974

00:05:14.979 --> 00:05:17.160 order like birds innately programmed
NOTE Confidence: 0.979974

00:05:17.220 --> 00:05:18.740 to sing a particular song?
NOTE Confidence: 0.979974

00:05:18.740 --> 00:05:19.380 I don't know if you
NOTE Confidence: 0.979974

00:05:19.380 --> 00:05:20.740 know this, but, like, roughly
NOTE Confidence: 0.979974

00:05:20.740 --> 00:05:22.660 half bird species can sing
NOTE Confidence: 0.979974

00:05:22.660 --> 00:05:24.495 their innate song from birth.

NOTE Confidence: 0.979974
00:05:24.895 --> 00:05:25.535 They don't need to be
NOTE Confidence: 0.979974
00:05:25.535 --> 00:05:26.574 taught it. The other half
NOTE Confidence: 0.979974
00:05:26.574 --> 00:05:27.214 need to be taught it.
NOTE Confidence: 0.979974
00:05:27.214 --> 00:05:28.335 They need exposure to the
NOTE Confidence: 0.979974
00:05:28.335 --> 00:05:30.095 parents singing before they can
NOTE Confidence: 0.979974
00:05:30.095 --> 00:05:31.375 also sing their songs. The
NOTE Confidence: 0.979974
00:05:31.375 --> 00:05:32.654 question is, would we build
NOTE Confidence: 0.979974
00:05:32.735 --> 00:05:33.775 what kind of society would
NOTE Confidence: 0.979974
00:05:33.775 --> 00:05:35.135 we make if we weren't
NOTE Confidence: 0.979974
00:05:35.135 --> 00:05:36.510 taught to build any kind
NOTE Confidence: 0.979974
00:05:36.510 --> 00:05:37.170 of society?
NOTE Confidence: 0.955822
00:05:37.550 --> 00:05:38.850 Now, of course, it's impossible.
NOTE Confidence: 0.99588865
00:05:39.470 --> 00:05:40.930 It's cruel and unethical
NOTE Confidence: 0.98460954
00:05:41.390 --> 00:05:42.589 to do this kind of
NOTE Confidence: 0.98460954
00:05:42.589 --> 00:05:44.270 thing, and it it's been
NOTE Confidence: 0.98460954

00:05:44.270 --> 00:05:45.630 contemplated for a long time,
NOTE Confidence: 0.98460954

00:05:45.630 --> 00:05:47.010 however, and it's been called
NOTE Confidence: 0.98460954

00:05:47.070 --> 00:05:47.890 the forbidden
NOTE Confidence: 0.99516034

00:05:48.350 --> 00:05:48.850 experiment.
NOTE Confidence: 0.99315107

00:05:50.145 --> 00:05:51.425 But such an experiment, as
NOTE Confidence: 0.99315107

00:05:51.425 --> 00:05:52.645 I said, has been contemplated
NOTE Confidence: 0.99315107

00:05:52.705 --> 00:05:54.464 and actually attempted by various
NOTE Confidence: 0.99315107

00:05:54.464 --> 00:05:54.964 monarchs
NOTE Confidence: 0.9782664

00:05:55.345 --> 00:05:56.785 who have typically been interested
NOTE Confidence: 0.9782664

00:05:56.785 --> 00:05:58.005 in what sort of language
NOTE Confidence: 0.9782664

00:05:58.065 --> 00:05:59.904 comes naturally to us. So
NOTE Confidence: 0.9782664

00:05:59.904 --> 00:06:01.585 according to Herodotus, for example,
NOTE Confidence: 0.9782664

00:06:01.585 --> 00:06:03.345 the Egyptian pharaoh, Psamtik the
NOTE Confidence: 0.9782664

00:06:03.345 --> 00:06:05.150 first, had some children
NOTE Confidence: 0.9774611

00:06:05.450 --> 00:06:07.390 raised without being spoken to
NOTE Confidence: 0.9774611

00:06:07.450 --> 00:06:08.730 in an attempt to determine

NOTE Confidence: 0.9774611

00:06:08.730 --> 00:06:10.010 if they possess an innate

NOTE Confidence: 0.9774611

00:06:10.010 --> 00:06:11.930 language. So, typically, these experiments

NOTE Confidence: 0.9774611

00:06:11.930 --> 00:06:13.290 involve taking a pair of

NOTE Confidence: 0.9774611

00:06:13.290 --> 00:06:15.050 children and having them raised

NOTE Confidence: 0.9774611

00:06:15.050 --> 00:06:16.650 by a mute shepherd up

NOTE Confidence: 0.9774611

00:06:16.650 --> 00:06:18.015 in the mountains, a shepherd

NOTE Confidence: 0.9774611

00:06:18.015 --> 00:06:19.695 who couldn't speak, and then

NOTE Confidence: 0.9774611

00:06:19.695 --> 00:06:21.135 come back, you know, twenty

NOTE Confidence: 0.9774611

00:06:21.135 --> 00:06:22.175 years later and see what

NOTE Confidence: 0.9774611

00:06:22.175 --> 00:06:23.214 kind of language did these

NOTE Confidence: 0.9774611

00:06:23.214 --> 00:06:24.435 two people. So ancient

NOTE Confidence: 0.97455835

00:06:25.055 --> 00:06:26.815 ancient scientists, ancient leaders were

NOTE Confidence: 0.97455835

00:06:26.815 --> 00:06:28.015 wondering, you know, what kind

NOTE Confidence: 0.97455835

00:06:28.015 --> 00:06:30.175 of innate language, might we

NOTE Confidence: 0.97455835

00:06:30.175 --> 00:06:30.675 have.

NOTE Confidence: 0.97323555

00:06:31.099 --> 00:06:32.620 And, I think James the
NOTE Confidence: 0.97323555

00:06:32.620 --> 00:06:33.900 fourth of Scotland, who did
NOTE Confidence: 0.97323555

00:06:33.900 --> 00:06:35.740 this experiment in the, in
NOTE Confidence: 0.97323555

00:06:35.740 --> 00:06:36.800 the fifteenth century,
NOTE Confidence: 0.9954825

00:06:38.060 --> 00:06:39.339 was actually very interested in
NOTE Confidence: 0.9954825

00:06:39.339 --> 00:06:40.379 what kind of language did
NOTE Confidence: 0.9954825

00:06:40.379 --> 00:06:41.759 Adam and Eve speak.
NOTE Confidence: 0.96516883

00:06:42.139 --> 00:06:43.740 And, so that's why he
NOTE Confidence: 0.96516883

00:06:43.740 --> 00:06:44.860 tried to do this experiment.
NOTE Confidence: 0.96516883

00:06:44.860 --> 00:06:45.979 And, allegedly, when they came
NOTE Confidence: 0.96516883

00:06:45.979 --> 00:06:47.395 back to the children, they
NOTE Confidence: 0.96516883

00:06:47.395 --> 00:06:48.775 spoke passable Hebrew,
NOTE Confidence: 0.9867568

00:06:49.235 --> 00:06:50.835 was the conclusion of that,
NOTE Confidence: 0.9867568

00:06:51.154 --> 00:06:51.654 experiment.
NOTE Confidence: 0.9800215

00:06:53.794 --> 00:06:54.195 So,
NOTE Confidence: 0.9669927

00:06:54.835 --> 00:06:56.435 so but, clearly clearly, we

NOTE Confidence: 0.9669927

00:06:56.435 --> 00:06:57.794 cannot do this much as

NOTE Confidence: 0.9669927

00:06:57.794 --> 00:06:59.315 I would, like for us,

NOTE Confidence: 0.9669927

00:06:59.555 --> 00:07:00.180 to do that.

NOTE Confidence: 0.9658571

00:07:01.139 --> 00:07:02.259 So what might be some

NOTE Confidence: 0.9658571

00:07:02.259 --> 00:07:03.620 proxies for such an experiment?

NOTE Confidence: 0.9658571

00:07:03.620 --> 00:07:04.339 Now there are a number

NOTE Confidence: 0.9658571

00:07:04.339 --> 00:07:05.000 of possibilities.

NOTE Confidence: 0.9816241

00:07:06.020 --> 00:07:07.300 And one possibility that occurred

NOTE Confidence: 0.9816241

00:07:07.300 --> 00:07:07.940 to me was that we

NOTE Confidence: 0.9816241

00:07:07.940 --> 00:07:09.560 could think about using shipwrecks

NOTE Confidence: 0.9816241

00:07:09.620 --> 00:07:10.979 as an example where people

NOTE Confidence: 0.9816241

00:07:10.979 --> 00:07:13.060 are thrown together without intending

NOTE Confidence: 0.9816241

00:07:13.060 --> 00:07:14.500 it and left to make

NOTE Confidence: 0.9816241

00:07:14.500 --> 00:07:16.315 society anew. So what, you

NOTE Confidence: 0.9816241

00:07:16.315 --> 00:07:17.195 know, what if we took

NOTE Confidence: 0.9816241

00:07:17.195 --> 00:07:18.395 a group of adults like
NOTE Confidence: 0.9816241

00:07:18.395 --> 00:07:19.355 you guys and I just
NOTE Confidence: 0.9816241

00:07:19.355 --> 00:07:20.735 shipwrecked you on an island,
NOTE Confidence: 0.9816241

00:07:20.795 --> 00:07:21.595 and then I came back
NOTE Confidence: 0.9816241

00:07:21.595 --> 00:07:22.795 ten years later to see
NOTE Confidence: 0.9816241

00:07:22.795 --> 00:07:24.155 what kind of social order,
NOTE Confidence: 0.9816241

00:07:24.315 --> 00:07:25.855 did you make for yourselves?
NOTE Confidence: 0.975926

00:07:26.715 --> 00:07:27.915 And, out of a out
NOTE Confidence: 0.975926

00:07:27.915 --> 00:07:29.490 of over nine thousand shipwrecks
NOTE Confidence: 0.975926

00:07:29.490 --> 00:07:31.090 that occurred between fifteen hundred
NOTE Confidence: 0.975926

00:07:31.090 --> 00:07:32.370 and nineteen hundred during the
NOTE Confidence: 0.975926

00:07:32.370 --> 00:07:34.230 European exploration of the world,
NOTE Confidence: 0.975926

00:07:34.450 --> 00:07:35.670 I was able to identify
NOTE Confidence: 0.975926

00:07:35.730 --> 00:07:37.810 twenty where the castaways numbered
NOTE Confidence: 0.975926

00:07:37.810 --> 00:07:39.490 more than nineteen people and
NOTE Confidence: 0.975926

00:07:39.490 --> 00:07:40.610 where they were stranded for

NOTE Confidence: 0.975926

00:07:40.610 --> 00:07:42.470 more than two months, pertinently

NOTE Confidence: 0.975926

00:07:42.530 --> 00:07:44.310 without contact with anyone else.

NOTE Confidence: 0.975926

00:07:44.405 --> 00:07:45.365 So if you were if

NOTE Confidence: 0.975926

00:07:45.365 --> 00:07:46.645 you were shipwrecked and immediately

NOTE Confidence: 0.975926

00:07:46.645 --> 00:07:47.385 to enslaved,

NOTE Confidence: 0.97388864

00:07:47.925 --> 00:07:49.065 or if you were shipwrecked

NOTE Confidence: 0.97388864

00:07:49.125 --> 00:07:50.325 and you were trading with

NOTE Confidence: 0.97388864

00:07:50.325 --> 00:07:51.605 some other peoples nearby, that

NOTE Confidence: 0.97388864

00:07:51.605 --> 00:07:53.045 didn't count. I looked at

NOTE Confidence: 0.97388864

00:07:53.045 --> 00:07:53.845 this, and this is a

NOTE Confidence: 0.97388864

00:07:53.845 --> 00:07:55.625 sort of archipelago of shipwrecks,

NOTE Confidence: 0.99758446

00:07:56.245 --> 00:07:57.365 my data sample that I

NOTE Confidence: 0.99758446

00:07:57.365 --> 00:07:58.949 used for this this particular

NOTE Confidence: 0.970654

00:07:59.250 --> 00:08:00.610 study shown here on this

NOTE Confidence: 0.970654

00:08:00.610 --> 00:08:02.050 map. And I studied in

NOTE Confidence: 0.970654

00:08:02.050 --> 00:08:03.569 detail what sort of social
NOTE Confidence: 0.970654

00:08:03.569 --> 00:08:04.770 order these people made for
NOTE Confidence: 0.970654

00:08:04.770 --> 00:08:05.810 themselves. So I took all
NOTE Confidence: 0.970654

00:08:05.810 --> 00:08:06.530 of it. Oh, the other
NOTE Confidence: 0.970654

00:08:06.530 --> 00:08:07.490 criteria, of course, is that
NOTE Confidence: 0.970654

00:08:07.490 --> 00:08:08.530 someone had to survive the
NOTE Confidence: 0.970654

00:08:08.530 --> 00:08:09.409 wreck to be able to
NOTE Confidence: 0.970654

00:08:09.409 --> 00:08:10.470 write about it afterwards.
NOTE Confidence: 0.97537553

00:08:11.155 --> 00:08:13.015 And there's one incredible tale
NOTE Confidence: 0.97537553

00:08:13.235 --> 00:08:15.735 of, these these shipwreck sailors
NOTE Confidence: 0.97537553

00:08:15.955 --> 00:08:17.495 managed to catch an albatross,
NOTE Confidence: 0.97204906

00:08:17.955 --> 00:08:19.655 and they tied a note
NOTE Confidence: 0.97204906

00:08:19.715 --> 00:08:21.795 to the albatross's leg identifying
NOTE Confidence: 0.97204906

00:08:21.795 --> 00:08:22.675 where they were wrecked and
NOTE Confidence: 0.97204906

00:08:22.675 --> 00:08:24.090 let the albatross go. And
NOTE Confidence: 0.97204906

00:08:24.090 --> 00:08:25.850 miraculously, this albatross was caught,

NOTE Confidence: 0.97204906
00:08:25.850 --> 00:08:27.550 like, three thousand miles away
NOTE Confidence: 0.97204906
00:08:27.690 --> 00:08:28.890 with instructions on where the
NOTE Confidence: 0.97204906
00:08:28.890 --> 00:08:30.010 wreck crew and a ship
NOTE Confidence: 0.97204906
00:08:30.010 --> 00:08:31.290 was dispatched to go find
NOTE Confidence: 0.97204906
00:08:31.290 --> 00:08:32.490 them, and they just found
NOTE Confidence: 0.97204906
00:08:32.490 --> 00:08:33.850 bones. They were all dead.
NOTE Confidence: 0.97204906
00:08:34.010 --> 00:08:34.890 So there was no way
NOTE Confidence: 0.97204906
00:08:34.890 --> 00:08:36.090 to know what happened there.
NOTE Confidence: 0.97204906
00:08:36.090 --> 00:08:37.450 But someone has to survive
NOTE Confidence: 0.97204906
00:08:37.450 --> 00:08:38.490 the shipwreck. And,
NOTE Confidence: 0.96695495
00:08:39.770 --> 00:08:40.465 and, actually, if you're interested
NOTE Confidence: 0.96695495
00:08:40.465 --> 00:08:41.665 in, you know, the citations
NOTE Confidence: 0.96695495
00:08:41.665 --> 00:08:42.304 to all of this stuff
NOTE Confidence: 0.96695495
00:08:42.304 --> 00:08:43.025 I'm saying are in the
NOTE Confidence: 0.96695495
00:08:43.025 --> 00:08:44.385 book. So if you actually
NOTE Confidence: 0.96695495

00:08:44.385 --> 00:08:45.505 wanna hunt down the Albatross
NOTE Confidence: 0.96695495

00:08:45.505 --> 00:08:46.545 story, I don't remember right
NOTE Confidence: 0.96695495

00:08:46.545 --> 00:08:47.905 now, but the citation is
NOTE Confidence: 0.96695495

00:08:47.905 --> 00:08:49.045 in the book. Anyway,
NOTE Confidence: 0.5994685

00:08:50.705 --> 00:08:51.184 so,
NOTE Confidence: 0.9631116

00:08:51.950 --> 00:08:53.470 so, so someone needs to
NOTE Confidence: 0.9631116

00:08:53.470 --> 00:08:54.270 survive. They need to write.
NOTE Confidence: 0.9631116

00:08:54.270 --> 00:08:54.990 So I read all the
NOTE Confidence: 0.9631116

00:08:54.990 --> 00:08:56.510 available accounts by these people,
NOTE Confidence: 0.9631116

00:08:56.510 --> 00:08:57.710 and sometimes more than one
NOTE Confidence: 0.9631116

00:08:57.710 --> 00:08:59.250 survivor wrote their own account.
NOTE Confidence: 0.9631116

00:08:59.309 --> 00:09:00.029 And there have been a
NOTE Confidence: 0.9631116

00:09:00.029 --> 00:09:00.850 lot of archaeological
NOTE Confidence: 0.9776054

00:09:01.230 --> 00:09:03.010 excavations of these wreck sites,
NOTE Confidence: 0.9776054

00:09:03.070 --> 00:09:04.029 which can often give you
NOTE Confidence: 0.9776054

00:09:04.029 --> 00:09:05.715 insights into the social order.

NOTE Confidence: 0.9776054

00:09:05.715 --> 00:09:06.515 So you can see, for

NOTE Confidence: 0.9776054

00:09:06.515 --> 00:09:07.875 example, did they build separate

NOTE Confidence: 0.9776054

00:09:07.875 --> 00:09:09.555 quarters for the passengers and

NOTE Confidence: 0.9776054

00:09:09.555 --> 00:09:10.675 the crew or for the

NOTE Confidence: 0.9776054

00:09:10.675 --> 00:09:12.115 officers and the enlisted men?

NOTE Confidence: 0.9776054

00:09:12.115 --> 00:09:13.075 Do they have, like, social

NOTE Confidence: 0.9776054

00:09:13.075 --> 00:09:14.434 hierarchy, or did they all

NOTE Confidence: 0.9776054

00:09:14.434 --> 00:09:15.875 live together? Or were they

NOTE Confidence: 0.9776054

00:09:15.875 --> 00:09:16.915 able to work together to

NOTE Confidence: 0.9776054

00:09:16.915 --> 00:09:18.035 build, like, a fire tower,

NOTE Confidence: 0.9776054

00:09:18.035 --> 00:09:19.075 for example, that no one

NOTE Confidence: 0.9776054

00:09:19.075 --> 00:09:20.429 person could build? So there's

NOTE Confidence: 0.9776054

00:09:20.429 --> 00:09:22.290 some evidence of collective action

NOTE Confidence: 0.9776054

00:09:22.429 --> 00:09:23.630 in the assembly of this

NOTE Confidence: 0.9776054

00:09:23.630 --> 00:09:25.309 of this type of, artifact

NOTE Confidence: 0.9776054

00:09:25.309 --> 00:09:26.350 that they made. So I
NOTE Confidence: 0.9776054

00:09:26.350 --> 00:09:27.230 did looked at all of
NOTE Confidence: 0.9776054

00:09:27.230 --> 00:09:28.350 those things. I studied in
NOTE Confidence: 0.9776054

00:09:28.350 --> 00:09:28.850 detail
NOTE Confidence: 0.8438157

00:09:30.110 --> 00:09:30.610 and,
NOTE Confidence: 0.9518902

00:09:31.070 --> 00:09:32.110 and to try to get
NOTE Confidence: 0.9518902

00:09:32.110 --> 00:09:32.774 a sense of of what
NOTE Confidence: 0.9518902

00:09:32.774 --> 00:09:33.894 kind of social order in
NOTE Confidence: 0.9518902

00:09:33.894 --> 00:09:36.154 these natural experiments might occur.
NOTE Confidence: 0.9518902

00:09:36.454 --> 00:09:38.214 And one particularly powerful pair
NOTE Confidence: 0.9518902

00:09:38.214 --> 00:09:39.815 of cases involved two crews
NOTE Confidence: 0.9518902

00:09:39.815 --> 00:09:41.175 that were stranded on opposite
NOTE Confidence: 0.9518902

00:09:41.175 --> 00:09:42.694 ends of an island that's
NOTE Confidence: 0.9518902

00:09:42.694 --> 00:09:44.214 north of Antarctica and south
NOTE Confidence: 0.9518902

00:09:44.214 --> 00:09:45.115 of New Zealand
NOTE Confidence: 0.9959503

00:09:45.450 --> 00:09:46.650 that were stranded at the

NOTE Confidence: 0.9959503
00:09:46.650 --> 00:09:48.730 same time in eighteen sixty
NOTE Confidence: 0.9959503
00:09:48.730 --> 00:09:50.429 four, though they were unaware
NOTE Confidence: 0.99312246
00:09:50.809 --> 00:09:52.650 of each other's fate. And
NOTE Confidence: 0.99312246
00:09:52.650 --> 00:09:54.170 this was almost a perfect
NOTE Confidence: 0.99312246
00:09:54.170 --> 00:09:56.190 natural experiment in social,
NOTE Confidence: 0.99358135
00:09:56.570 --> 00:09:58.384 order. So on the, on
NOTE Confidence: 0.99358135
00:09:58.384 --> 00:09:59.345 the northern part of the
NOTE Confidence: 0.99358135
00:09:59.345 --> 00:10:00.804 island, the Inverco
NOTE Confidence: 0.8512528
00:10:01.665 --> 00:10:02.704 wrecked. And in in eighteen
NOTE Confidence: 0.8512528
00:10:02.704 --> 00:10:04.865 sixty four, nineteen men lost
NOTE Confidence: 0.8512528
00:10:04.865 --> 00:10:05.365 ashore.
NOTE Confidence: 0.98383415
00:10:05.745 --> 00:10:06.865 And on the southern part
NOTE Confidence: 0.98383415
00:10:06.865 --> 00:10:08.245 of the island, the Grafton
NOTE Confidence: 0.98383415
00:10:08.304 --> 00:10:09.584 comes into this bay, and
NOTE Confidence: 0.98383415
00:10:09.584 --> 00:10:11.365 it wrecks, and five men,
NOTE Confidence: 0.9983424

00:10:11.904 --> 00:10:12.644 come ashore.
NOTE Confidence: 0.99296355

00:10:12.990 --> 00:10:14.110 Now there's a very interesting
NOTE Confidence: 0.99296355

00:10:14.110 --> 00:10:15.470 difference in what immediately happens.
NOTE Confidence: 0.99296355

00:10:15.470 --> 00:10:16.290 On the Inverco,
NOTE Confidence: 0.9798896

00:10:17.390 --> 00:10:19.230 the the boat, hits the
NOTE Confidence: 0.9798896

00:10:19.230 --> 00:10:19.730 rocks.
NOTE Confidence: 0.9570983

00:10:20.510 --> 00:10:22.270 Nineteen men wash ashore. They
NOTE Confidence: 0.9570983

00:10:22.270 --> 00:10:23.309 have a little salvage, a
NOTE Confidence: 0.9570983

00:10:23.309 --> 00:10:24.429 little hard tack in their
NOTE Confidence: 0.9570983

00:10:24.429 --> 00:10:26.110 pockets, some matches. And then,
NOTE Confidence: 0.9570983

00:10:26.110 --> 00:10:26.610 hilariously,
NOTE Confidence: 0.9700309

00:10:27.275 --> 00:10:27.915 they try to light the
NOTE Confidence: 0.9700309

00:10:27.915 --> 00:10:29.275 fire with the matches, and
NOTE Confidence: 0.9700309

00:10:29.275 --> 00:10:30.635 they, they light the fire,
NOTE Confidence: 0.9700309

00:10:30.635 --> 00:10:31.695 and then all the matches,
NOTE Confidence: 0.9700309

00:10:31.835 --> 00:10:32.875 you know, light like you

NOTE Confidence: 0.9700309

00:10:32.875 --> 00:10:33.675 might see in a movie,

NOTE Confidence: 0.9700309

00:10:33.675 --> 00:10:34.395 and so they lose all

NOTE Confidence: 0.9700309

00:10:34.395 --> 00:10:35.135 their matches.

NOTE Confidence: 0.9738806

00:10:35.675 --> 00:10:36.955 But, and they get a

NOTE Confidence: 0.9738806

00:10:36.955 --> 00:10:38.795 little salvage. But, pertinently, one

NOTE Confidence: 0.9738806

00:10:38.795 --> 00:10:40.155 of the men, had a

NOTE Confidence: 0.9738806

00:10:40.155 --> 00:10:41.515 broken leg when he washed

NOTE Confidence: 0.9738806

00:10:41.515 --> 00:10:42.015 ashore.

NOTE Confidence: 0.98419493

00:10:42.600 --> 00:10:43.720 And these the other,

NOTE Confidence: 0.98468524

00:10:44.200 --> 00:10:45.800 eighteen people decided on that

NOTE Confidence: 0.98468524

00:10:45.800 --> 00:10:47.260 very first couple of days,

NOTE Confidence: 0.9814584

00:10:47.800 --> 00:10:49.160 they they washed ashore on

NOTE Confidence: 0.9814584

00:10:49.160 --> 00:10:49.880 a little beach, and there

NOTE Confidence: 0.9814584

00:10:49.880 --> 00:10:51.240 were these high cliffs to

NOTE Confidence: 0.9814584

00:10:51.240 --> 00:10:52.519 abandon this man to his

NOTE Confidence: 0.9814584

00:10:52.519 --> 00:10:54.040 death. And the eighteen of
NOTE Confidence: 0.9814584

00:10:54.040 --> 00:10:55.399 them scrambled up the cliff,
NOTE Confidence: 0.9814584

00:10:55.399 --> 00:10:56.519 and they moved on into
NOTE Confidence: 0.9814584

00:10:56.519 --> 00:10:58.184 the island. And in that,
NOTE Confidence: 0.9814584

00:10:58.324 --> 00:11:00.324 those nineteen those remaining eighteen
NOTE Confidence: 0.9814584

00:11:00.324 --> 00:11:00.824 guys,
NOTE Confidence: 0.9850258

00:11:01.444 --> 00:11:02.404 all but three of them
NOTE Confidence: 0.9850258

00:11:02.404 --> 00:11:03.684 died, and there was, like,
NOTE Confidence: 0.9850258

00:11:03.684 --> 00:11:05.384 an unfortunate episode of cannibalism,
NOTE Confidence: 0.9906306

00:11:05.845 --> 00:11:07.384 during the, escapade,
NOTE Confidence: 0.9999445

00:11:07.764 --> 00:11:08.425 as well.
NOTE Confidence: 0.9716417

00:11:08.804 --> 00:11:10.004 Now the Grafton, on the
NOTE Confidence: 0.9716417

00:11:10.004 --> 00:11:11.045 other hand, when the boat
NOTE Confidence: 0.9716417

00:11:11.045 --> 00:11:12.084 wrecks, four of the men
NOTE Confidence: 0.9716417

00:11:12.084 --> 00:11:13.420 make it ashore, and the
NOTE Confidence: 0.9716417

00:11:13.420 --> 00:11:14.540 captain had had a fever

NOTE Confidence: 0.9716417

00:11:14.540 --> 00:11:15.679 and was in his cabin.

NOTE Confidence: 0.97272307

00:11:16.540 --> 00:11:17.660 And the other four men

NOTE Confidence: 0.97272307

00:11:17.660 --> 00:11:19.020 contrived at the great personal

NOTE Confidence: 0.97272307

00:11:19.020 --> 00:11:20.300 risk of their lives to

NOTE Confidence: 0.97272307

00:11:20.300 --> 00:11:21.340 set up a rope chain

NOTE Confidence: 0.97272307

00:11:21.340 --> 00:11:22.540 between the shore and the

NOTE Confidence: 0.97272307

00:11:22.540 --> 00:11:24.140 offshore wreck so that a

NOTE Confidence: 0.97272307

00:11:24.140 --> 00:11:25.600 rope would connect the shoreline

NOTE Confidence: 0.97272307

00:11:25.845 --> 00:11:27.045 to the wreck, and they

NOTE Confidence: 0.97272307

00:11:27.045 --> 00:11:28.165 swam back and forth the

NOTE Confidence: 0.97272307

00:11:28.165 --> 00:11:29.764 great danger to themselves to

NOTE Confidence: 0.97272307

00:11:29.764 --> 00:11:30.264 retrieve,

NOTE Confidence: 0.9841302

00:11:30.884 --> 00:11:32.324 the captain. And this is

NOTE Confidence: 0.9841302

00:11:32.324 --> 00:11:33.684 the drawing from, one of

NOTE Confidence: 0.9841302

00:11:33.684 --> 00:11:35.125 the, one of the books

NOTE Confidence: 0.9841302

00:11:35.125 --> 00:11:36.725 about this event. These shipwreck

NOTE Confidence: 0.9841302

00:11:36.725 --> 00:11:38.084 stories were like bestsellers in

NOTE Confidence: 0.9841302

00:11:38.084 --> 00:11:40.024 the nineteenth century. People avidly

NOTE Confidence: 0.9841302

00:11:40.084 --> 00:11:40.904 consumed them.

NOTE Confidence: 0.95043015

00:11:41.980 --> 00:11:43.100 So this is how they

NOTE Confidence: 0.95043015

00:11:43.100 --> 00:11:45.280 saved the feverish captain's life.

NOTE Confidence: 0.95043015

00:11:45.340 --> 00:11:46.940 And this wreck therefore begins

NOTE Confidence: 0.95043015

00:11:46.940 --> 00:11:47.820 with a saving of a

NOTE Confidence: 0.95043015

00:11:47.820 --> 00:11:49.420 life with the people working

NOTE Confidence: 0.95043015

00:11:49.420 --> 00:11:50.700 together to save this man's

NOTE Confidence: 0.95043015

00:11:50.700 --> 00:11:52.059 life. And all five of

NOTE Confidence: 0.95043015

00:11:52.059 --> 00:11:53.740 these people survived two years

NOTE Confidence: 0.95043015

00:11:53.740 --> 00:11:55.304 on the island, and they,

NOTE Confidence: 0.95043015

00:11:55.705 --> 00:11:56.205 successfully,

NOTE Confidence: 0.97625244

00:11:56.825 --> 00:11:57.545 made it,

NOTE Confidence: 0.9976828

00:11:57.865 --> 00:11:58.365 off.

NOTE Confidence: 0.9838942
00:11:59.545 --> 00:12:00.665 And just to be very
NOTE Confidence: 0.9838942
00:12:00.665 --> 00:12:01.705 clear, it was not very
NOTE Confidence: 0.9838942
00:12:01.705 --> 00:12:02.985 pleasant to be the subject
NOTE Confidence: 0.9838942
00:12:02.985 --> 00:12:03.804 of these unintentional,
NOTE Confidence: 0.9997262
00:12:04.505 --> 00:12:05.645 natural experiments.
NOTE Confidence: 0.9869818
00:12:06.025 --> 00:12:06.905 This is the hut that
NOTE Confidence: 0.9869818
00:12:06.905 --> 00:12:07.385 they,
NOTE Confidence: 0.9935917
00:12:07.785 --> 00:12:08.765 built for themselves,
NOTE Confidence: 0.933195
00:12:09.625 --> 00:12:10.445 working together,
NOTE Confidence: 0.96613675
00:12:10.930 --> 00:12:12.610 until they finally constructed a
NOTE Confidence: 0.96613675
00:12:12.610 --> 00:12:14.390 boat. They build a forge.
NOTE Confidence: 0.96613675
00:12:14.610 --> 00:12:16.290 They clubbed a seal to
NOTE Confidence: 0.96613675
00:12:16.290 --> 00:12:17.490 death, and then they use
NOTE Confidence: 0.96613675
00:12:17.490 --> 00:12:18.530 the seal skin to make
NOTE Confidence: 0.96613675
00:12:18.530 --> 00:12:20.130 a bellows. Actually, the ability
NOTE Confidence: 0.96613675

00:12:20.130 --> 00:12:21.410 to fabricate a bellows is
NOTE Confidence: 0.96613675

00:12:21.410 --> 00:12:23.170 often a key predictor in
NOTE Confidence: 0.96613675

00:12:23.170 --> 00:12:25.190 survival on these island escapades,
NOTE Confidence: 0.9752187

00:12:25.885 --> 00:12:26.845 because then you can forge
NOTE Confidence: 0.9752187

00:12:26.845 --> 00:12:28.765 iron to make nails to
NOTE Confidence: 0.9752187

00:12:28.765 --> 00:12:30.464 assemble a boat to escape,
NOTE Confidence: 0.9752187

00:12:30.684 --> 00:12:31.644 which is what these guys
NOTE Confidence: 0.9752187

00:12:31.644 --> 00:12:32.144 did.
NOTE Confidence: 0.968878

00:12:32.524 --> 00:12:33.325 And they also one of
NOTE Confidence: 0.968878

00:12:33.325 --> 00:12:34.445 the guys remembered an old
NOTE Confidence: 0.968878

00:12:34.445 --> 00:12:36.125 recipe for Roman cement. They
NOTE Confidence: 0.968878

00:12:36.125 --> 00:12:38.045 collected shells. They crushed the
NOTE Confidence: 0.968878

00:12:38.045 --> 00:12:39.964 shells. They they, burnt them
NOTE Confidence: 0.968878

00:12:39.964 --> 00:12:41.320 to make lime, and they
NOTE Confidence: 0.968878

00:12:41.320 --> 00:12:42.600 built, they were able to
NOTE Confidence: 0.968878

00:12:42.600 --> 00:12:44.620 make some, some cement foundations.

NOTE Confidence: 0.968878
00:12:44.839 --> 00:12:45.899 It's just an extraordinary,
NOTE Confidence: 0.86356235
00:12:47.079 --> 00:12:47.579 leadership,
NOTE Confidence: 0.99979436
00:12:48.600 --> 00:12:49.500 and experience
NOTE Confidence: 0.99155885
00:12:49.880 --> 00:12:51.820 of, of the Grafton crew.
NOTE Confidence: 0.9968201
00:12:52.279 --> 00:12:53.420 Now what was fascinating
NOTE Confidence: 0.97803986
00:12:54.155 --> 00:12:54.955 is that they were both
NOTE Confidence: 0.97803986
00:12:54.955 --> 00:12:55.755 on the island at the
NOTE Confidence: 0.97803986
00:12:55.755 --> 00:12:56.875 same time in the same
NOTE Confidence: 0.97803986
00:12:56.875 --> 00:12:57.915 year, and one of them
NOTE Confidence: 0.97803986
00:12:57.915 --> 00:12:58.635 did well and one of
NOTE Confidence: 0.97803986
00:12:58.635 --> 00:13:00.075 them did very poorly. And
NOTE Confidence: 0.97803986
00:13:00.075 --> 00:13:01.835 in the Grafton account, they're
NOTE Confidence: 0.97803986
00:13:01.835 --> 00:13:03.035 exploring the island. And in
NOTE Confidence: 0.97803986
00:13:03.115 --> 00:13:04.335 on the on the diary
NOTE Confidence: 0.97803986
00:13:04.635 --> 00:13:05.915 of the captain, it says
NOTE Confidence: 0.97803986

00:13:05.915 --> 00:13:06.955 on a particular day, they
NOTE Confidence: 0.97803986

00:13:06.955 --> 00:13:07.915 thought they saw a column
NOTE Confidence: 0.97803986

00:13:07.915 --> 00:13:09.570 of smoke up north. And,
NOTE Confidence: 0.97803986

00:13:10.050 --> 00:13:10.850 they went to see if
NOTE Confidence: 0.97803986

00:13:10.850 --> 00:13:11.730 they could find the column
NOTE Confidence: 0.97803986

00:13:11.730 --> 00:13:12.530 of smoke, but they didn't.
NOTE Confidence: 0.97803986

00:13:12.530 --> 00:13:13.970 And I'm convinced that they
NOTE Confidence: 0.97803986

00:13:13.970 --> 00:13:15.270 saw smoke from the Inverco
NOTE Confidence: 0.97803986

00:13:15.330 --> 00:13:16.850 crew. And I spent a
NOTE Confidence: 0.97803986

00:13:16.850 --> 00:13:18.370 year trying to find in
NOTE Confidence: 0.97803986

00:13:18.370 --> 00:13:19.809 the Inverco records, did they,
NOTE Confidence: 0.97803986

00:13:19.809 --> 00:13:21.170 in approximately the same day,
NOTE Confidence: 0.97803986

00:13:21.170 --> 00:13:22.450 talk about being further south
NOTE Confidence: 0.97803986

00:13:22.450 --> 00:13:23.665 and lighting a fire? I
NOTE Confidence: 0.97803986

00:13:23.665 --> 00:13:24.465 would have loved to be
NOTE Confidence: 0.97803986

00:13:24.465 --> 00:13:25.345 able to do that, but

NOTE Confidence: 0.97803986

00:13:25.345 --> 00:13:26.725 I was unable to prove

NOTE Confidence: 0.97803986

00:13:26.865 --> 00:13:27.765 that they actually,

NOTE Confidence: 0.9995886

00:13:28.225 --> 00:13:29.585 almost came into contact with

NOTE Confidence: 0.9995886

00:13:29.585 --> 00:13:30.165 each other.

NOTE Confidence: 0.9756674

00:13:31.425 --> 00:13:32.625 And I also looked not

NOTE Confidence: 0.9756674

00:13:32.625 --> 00:13:34.625 only at unintentional shipwreck communities,

NOTE Confidence: 0.9756674

00:13:34.625 --> 00:13:36.005 but at intentional communities

NOTE Confidence: 0.97569084

00:13:36.350 --> 00:13:38.210 such as nineteenth century communes

NOTE Confidence: 0.97569084

00:13:38.429 --> 00:13:39.870 where people deliberately set out

NOTE Confidence: 0.97569084

00:13:39.870 --> 00:13:41.010 to remake society

NOTE Confidence: 0.98103595

00:13:41.390 --> 00:13:42.830 possibly in a new way.

NOTE Confidence: 0.98103595

00:13:42.830 --> 00:13:43.870 And people have been doing

NOTE Confidence: 0.98103595

00:13:43.870 --> 00:13:45.230 this since Roman times. For

NOTE Confidence: 0.98103595

00:13:45.230 --> 00:13:46.190 thousands of years, we have

NOTE Confidence: 0.98103595

00:13:46.190 --> 00:13:47.870 records of people saying society

NOTE Confidence: 0.98103595

00:13:47.870 --> 00:13:49.470 is all screwed up. It's
NOTE Confidence: 0.98103595

00:13:49.470 --> 00:13:51.070 totally screwed up. Let's go
NOTE Confidence: 0.98103595

00:13:51.070 --> 00:13:52.265 and start again and try
NOTE Confidence: 0.98103595

00:13:52.265 --> 00:13:52.845 from scratch,
NOTE Confidence: 0.99965125

00:13:53.705 --> 00:13:55.165 to make a new society.
NOTE Confidence: 0.99664074

00:13:55.785 --> 00:13:56.905 So people have been assembling
NOTE Confidence: 0.99664074

00:13:56.905 --> 00:13:58.285 themselves into these intentional,
NOTE Confidence: 0.9742012

00:13:58.905 --> 00:13:59.405 communities.
NOTE Confidence: 0.9416233

00:14:00.105 --> 00:14:01.385 And I looked also, for
NOTE Confidence: 0.9416233

00:14:01.385 --> 00:14:02.665 example, at the shakers and
NOTE Confidence: 0.9416233

00:14:02.665 --> 00:14:04.265 other communitarian movements at the
NOTE Confidence: 0.9416233

00:14:04.265 --> 00:14:06.050 United States and at twentieth
NOTE Confidence: 0.9416233

00:14:06.110 --> 00:14:08.030 century communes too and at
NOTE Confidence: 0.9416233

00:14:08.030 --> 00:14:09.970 settlements of scientists in Antarctica
NOTE Confidence: 0.9618273

00:14:10.429 --> 00:14:11.550 isolated from the rest of
NOTE Confidence: 0.9618273

00:14:11.550 --> 00:14:13.070 the world for months. So

NOTE Confidence: 0.9618273

00:14:13.070 --> 00:14:13.950 as you many of you

NOTE Confidence: 0.9618273

00:14:13.950 --> 00:14:15.390 know, we maintain a we

NOTE Confidence: 0.9618273

00:14:15.550 --> 00:14:17.309 the Americans maintain a a

NOTE Confidence: 0.9618273

00:14:17.309 --> 00:14:17.809 scientific

NOTE Confidence: 0.9666311

00:14:19.645 --> 00:14:21.105 site on the South Pole

NOTE Confidence: 0.9666311

00:14:21.245 --> 00:14:23.245 and, every year about fifty

NOTE Confidence: 0.9666311

00:14:23.245 --> 00:14:24.765 or a hundred people winter

NOTE Confidence: 0.9666311

00:14:24.765 --> 00:14:25.645 over in the South Pole.

NOTE Confidence: 0.9666311

00:14:25.645 --> 00:14:26.525 And for nine months, they

NOTE Confidence: 0.9666311

00:14:26.525 --> 00:14:27.485 have no contact with anyone

NOTE Confidence: 0.9666311

00:14:27.485 --> 00:14:28.365 else. There's no getting in

NOTE Confidence: 0.9666311

00:14:28.365 --> 00:14:29.404 or out there. So these

NOTE Confidence: 0.9666311

00:14:29.404 --> 00:14:31.165 people isolate themselves in the

NOTE Confidence: 0.9666311

00:14:31.165 --> 00:14:33.000 South poll. And I looked

NOTE Confidence: 0.9666311

00:14:33.000 --> 00:14:34.600 at online worlds. You know,

NOTE Confidence: 0.9666311

00:14:34.600 --> 00:14:35.640 I thought, well, you know,
NOTE Confidence: 0.9666311

00:14:35.640 --> 00:14:36.760 we're creating all these new
NOTE Confidence: 0.9666311

00:14:36.760 --> 00:14:38.120 online worlds. You know, if
NOTE Confidence: 0.9666311

00:14:38.120 --> 00:14:39.960 people are given the freedom
NOTE Confidence: 0.9666311

00:14:39.960 --> 00:14:40.840 to make any kind of
NOTE Confidence: 0.9666311

00:14:40.840 --> 00:14:42.700 social order they want unrestricted
NOTE Confidence: 0.9666311

00:14:43.000 --> 00:14:43.900 from a corporeal,
NOTE Confidence: 0.9514199

00:14:44.555 --> 00:14:46.154 situation, what kind of social
NOTE Confidence: 0.9514199

00:14:46.154 --> 00:14:47.915 order, would they make? And
NOTE Confidence: 0.9514199

00:14:47.915 --> 00:14:49.915 many other examples, including experiments
NOTE Confidence: 0.9514199

00:14:49.915 --> 00:14:51.035 I've done in my lab
NOTE Confidence: 0.9514199

00:14:51.035 --> 00:14:52.795 with over forty thousand research
NOTE Confidence: 0.9514199

00:14:52.795 --> 00:14:55.135 subjects where we've created temporary
NOTE Confidence: 0.9514199

00:14:55.355 --> 00:14:57.375 artificial societies of real people,
NOTE Confidence: 0.9514199

00:14:57.530 --> 00:14:58.810 and we engage in social
NOTE Confidence: 0.9514199

00:14:58.810 --> 00:15:00.250 engineering with these thousands of

NOTE Confidence: 0.9514199

00:15:00.250 --> 00:15:01.870 people, putting them in groups

NOTE Confidence: 0.9514199

00:15:01.930 --> 00:15:03.130 and in a godlike way

NOTE Confidence: 0.9514199

00:15:03.130 --> 00:15:04.810 manipulating different aspects of their

NOTE Confidence: 0.9514199

00:15:04.810 --> 00:15:06.090 lives to see, could we

NOTE Confidence: 0.9514199

00:15:06.090 --> 00:15:07.290 get people, for example, to

NOTE Confidence: 0.9514199

00:15:07.290 --> 00:15:09.130 cooperate and work together if

NOTE Confidence: 0.9514199

00:15:09.130 --> 00:15:10.590 we arrange their social interactions

NOTE Confidence: 0.9514199

00:15:10.730 --> 00:15:12.830 one way versus another way?

NOTE Confidence: 0.9890177

00:15:13.315 --> 00:15:14.855 Or must their social interactions

NOTE Confidence: 0.9890177

00:15:14.915 --> 00:15:16.675 be organized the way real

NOTE Confidence: 0.9890177

00:15:16.675 --> 00:15:18.455 human social networks are structured

NOTE Confidence: 0.9890177

00:15:18.595 --> 00:15:19.475 in order for them to

NOTE Confidence: 0.9890177

00:15:19.475 --> 00:15:20.615 even be able to cooperate

NOTE Confidence: 0.9890177

00:15:20.675 --> 00:15:22.355 at all, for example, or

NOTE Confidence: 0.9890177

00:15:22.355 --> 00:15:23.895 manipulating the amount of inequality

NOTE Confidence: 0.98869884

00:15:24.355 --> 00:15:26.250 in these artificial worlds, making
NOTE Confidence: 0.98869884

00:15:26.250 --> 00:15:27.930 some unequal societies or some
NOTE Confidence: 0.98869884

00:15:27.930 --> 00:15:28.990 very equal societies
NOTE Confidence: 0.9180066

00:15:29.370 --> 00:15:30.990 and testing how much inequality
NOTE Confidence: 0.96349365

00:15:31.290 --> 00:15:32.970 is corrosive to the social
NOTE Confidence: 0.96349365

00:15:32.970 --> 00:15:34.570 order. And in still other
NOTE Confidence: 0.96349365

00:15:34.570 --> 00:15:36.090 examples such as nuclear sub
NOTE Confidence: 0.96349365

00:15:36.090 --> 00:15:38.910 crews, Latin American prisons, minors
NOTE Confidence: 0.96349365

00:15:39.130 --> 00:15:40.875 trapped deep under the earth,
NOTE Confidence: 0.96349365

00:15:41.035 --> 00:15:42.955 and communities formed by displaced
NOTE Confidence: 0.96349365

00:15:42.955 --> 00:15:44.315 persons in the wake of
NOTE Confidence: 0.96349365

00:15:44.315 --> 00:15:45.295 natural disasters.
NOTE Confidence: 0.992928

00:15:46.795 --> 00:15:47.755 And what I found in
NOTE Confidence: 0.992928

00:15:47.755 --> 00:15:48.715 looking at all of these
NOTE Confidence: 0.992928

00:15:48.715 --> 00:15:50.155 examples is that there are
NOTE Confidence: 0.992928

00:15:50.155 --> 00:15:51.935 some deep and fundamental principles

NOTE Confidence: 0.9914733
00:15:52.315 --> 00:15:54.235 that constrain us to only
NOTE Confidence: 0.9914733
00:15:54.235 --> 00:15:56.095 one way of being social.
NOTE Confidence: 0.97453725
00:15:56.510 --> 00:15:57.630 And I'd like to illustrate
NOTE Confidence: 0.97453725
00:15:57.630 --> 00:15:58.589 this by reference to a
NOTE Confidence: 0.97453725
00:15:58.589 --> 00:15:59.950 very famous example of the
NOTE Confidence: 0.97453725
00:15:59.950 --> 00:16:01.149 so called world of all
NOTE Confidence: 0.97453725
00:16:01.149 --> 00:16:03.070 possible shells that was also
NOTE Confidence: 0.97453725
00:16:03.070 --> 00:16:04.190 popularized by,
NOTE Confidence: 0.98349094
00:16:04.910 --> 00:16:05.970 by Richard Dawkins.
NOTE Confidence: 0.9800701
00:16:06.589 --> 00:16:07.790 And this work was originally
NOTE Confidence: 0.9800701
00:16:07.790 --> 00:16:08.690 done in the 1960s
NOTE Confidence: 0.8833731
00:16:09.149 --> 00:16:10.205 by a paleontologist
NOTE Confidence: 0.9669237
00:16:10.665 --> 00:16:12.025 at University of Chicago, a
NOTE Confidence: 0.9669237
00:16:12.025 --> 00:16:12.665 man by the name of
NOTE Confidence: 0.9669237
00:16:12.665 --> 00:16:13.485 David Raub,
NOTE Confidence: 0.994628

00:16:13.865 --> 00:16:15.785 who became fascinated by shell

NOTE Confidence: 0.994628

00:16:15.785 --> 00:16:16.285 morphology

NOTE Confidence: 0.959735

00:16:16.825 --> 00:16:18.105 and whether it was possible

NOTE Confidence: 0.959735

00:16:18.105 --> 00:16:19.385 to unify the world of

NOTE Confidence: 0.959735

00:16:19.385 --> 00:16:19.885 shells

NOTE Confidence: 0.9955363

00:16:20.265 --> 00:16:21.565 within a single equation.

NOTE Confidence: 0.99113923

00:16:21.930 --> 00:16:23.529 Could we somehow could all

NOTE Confidence: 0.99113923

00:16:23.529 --> 00:16:24.730 the shells, all the different

NOTE Confidence: 0.99113923

00:16:24.730 --> 00:16:26.250 shapes of shells, could they

NOTE Confidence: 0.99113923

00:16:26.250 --> 00:16:27.690 be understood by reference to

NOTE Confidence: 0.99113923

00:16:27.690 --> 00:16:29.630 a single mathematical equation?

NOTE Confidence: 0.91600096

00:16:30.010 --> 00:16:31.610 And he defies the he

NOTE Confidence: 0.91600096

00:16:31.610 --> 00:16:32.890 devised the following way of

NOTE Confidence: 0.91600096

00:16:32.890 --> 00:16:34.990 thinking about it, arraying shells

NOTE Confidence: 0.91600096

00:16:35.245 --> 00:16:36.065 in three-dimensional

NOTE Confidence: 0.95478195

00:16:36.365 --> 00:16:37.805 space that he called a

NOTE Confidence: 0.95478195

00:16:37.805 --> 00:16:38.305 morphospace.

NOTE Confidence: 0.9520454

00:16:39.565 --> 00:16:40.605 So there are there are

NOTE Confidence: 0.9520454

00:16:40.605 --> 00:16:42.225 three axes on this cell.

NOTE Confidence: 0.9520454

00:16:42.445 --> 00:16:43.805 So on the y axis

NOTE Confidence: 0.9520454

00:16:43.805 --> 00:16:45.245 going up on the on

NOTE Confidence: 0.9520454

00:16:45.245 --> 00:16:46.145 the back there,

NOTE Confidence: 0.93875235

00:16:46.605 --> 00:16:48.465 is I'm sorry. This axle.

NOTE Confidence: 0.93875235

00:16:48.560 --> 00:16:49.680 So this is the x

NOTE Confidence: 0.93875235

00:16:49.680 --> 00:16:51.040 axis. This is the y

NOTE Confidence: 0.93875235

00:16:51.040 --> 00:16:51.540 axis.

NOTE Confidence: 0.95051163

00:16:52.519 --> 00:16:53.519 Not Are you I'm on

NOTE Confidence: 0.95051163

00:16:53.519 --> 00:16:54.320 the x. Can you hear

NOTE Confidence: 0.95051163

00:16:54.320 --> 00:16:55.120 me? Just so people can

NOTE Confidence: 0.95051163

00:16:55.120 --> 00:16:55.760 hear me. Oh, hear me

NOTE Confidence: 0.95051163

00:16:55.760 --> 00:16:57.279 on the Zoom. Yeah. Okay.

NOTE Confidence: 0.95051163

00:16:57.279 --> 00:16:58.399 So well, alright. So I'm
NOTE Confidence: 0.95051163

00:16:58.399 --> 00:16:59.519 gonna this is very difficult
NOTE Confidence: 0.95051163

00:16:59.519 --> 00:17:00.399 for a Greek like me
NOTE Confidence: 0.95051163

00:17:00.399 --> 00:17:01.199 to stay put in one
NOTE Confidence: 0.95051163

00:17:01.199 --> 00:17:02.695 place, I have to say.
NOTE Confidence: 0.95051163

00:17:02.695 --> 00:17:03.575 So I'm gonna stay here
NOTE Confidence: 0.95051163

00:17:03.575 --> 00:17:04.855 in the microphone. Okay. So
NOTE Confidence: 0.95051163

00:17:04.855 --> 00:17:06.295 there are three axes. So
NOTE Confidence: 0.95051163

00:17:06.295 --> 00:17:07.335 on the x axis, the
NOTE Confidence: 0.95051163

00:17:07.335 --> 00:17:08.295 y axis, and the z
NOTE Confidence: 0.95051163

00:17:08.295 --> 00:17:10.455 axis. The y axis is
NOTE Confidence: 0.95051163

00:17:10.455 --> 00:17:11.115 the distance,
NOTE Confidence: 0.99977285

00:17:11.494 --> 00:17:12.935 and that is the rate
NOTE Confidence: 0.99977285

00:17:12.935 --> 00:17:13.595 at which
NOTE Confidence: 0.98321027

00:17:13.895 --> 00:17:15.415 the opening of the shell,
NOTE Confidence: 0.9797711

00:17:16.630 --> 00:17:17.910 moves away from the central

NOTE Confidence: 0.9797711

00:17:17.910 --> 00:17:19.190 axis like a coil of

NOTE Confidence: 0.9797711

00:17:19.190 --> 00:17:20.630 stamps. Okay? So you can

NOTE Confidence: 0.9797711

00:17:20.630 --> 00:17:21.830 have a tightly coiled coil

NOTE Confidence: 0.9797711

00:17:21.830 --> 00:17:23.109 of stamps or a loose

NOTE Confidence: 0.9797711

00:17:23.109 --> 00:17:24.390 coil of stamps, and that

NOTE Confidence: 0.9797711

00:17:24.390 --> 00:17:25.590 can be quantified by one

NOTE Confidence: 0.9797711

00:17:25.590 --> 00:17:26.090 parameter.

NOTE Confidence: 0.9904497

00:17:26.790 --> 00:17:27.990 On the x axis at

NOTE Confidence: 0.9904497

00:17:27.990 --> 00:17:29.270 the bottom, but you can

NOTE Confidence: 0.9904497

00:17:29.270 --> 00:17:30.410 see the top illustrations

NOTE Confidence: 0.9580615

00:17:31.035 --> 00:17:32.575 that illustrates the x axis,

NOTE Confidence: 0.9580615

00:17:32.875 --> 00:17:33.615 over there,

NOTE Confidence: 0.9586411

00:17:35.195 --> 00:17:36.795 you have what's called, the

NOTE Confidence: 0.9586411

00:17:36.795 --> 00:17:37.295 translation,

NOTE Confidence: 0.99121624

00:17:37.915 --> 00:17:39.035 and that's the rate at

NOTE Confidence: 0.99121624

00:17:39.035 --> 00:17:40.234 which the opening of the
NOTE Confidence: 0.99121624

00:17:40.234 --> 00:17:41.755 the shell moves up and
NOTE Confidence: 0.99121624

00:17:41.755 --> 00:17:42.715 down the axis like a
NOTE Confidence: 0.99121624

00:17:42.715 --> 00:17:44.075 slinky. You can have a
NOTE Confidence: 0.99121624

00:17:44.075 --> 00:17:45.515 really compact slinky or a
NOTE Confidence: 0.99121624

00:17:45.515 --> 00:17:47.090 really loose slinky. Okay? That's
NOTE Confidence: 0.99121624

00:17:47.090 --> 00:17:48.690 the second parameter. And the
NOTE Confidence: 0.99121624

00:17:48.690 --> 00:17:49.970 third parameter on the z
NOTE Confidence: 0.99121624

00:17:49.970 --> 00:17:51.090 axis on the far left
NOTE Confidence: 0.99121624

00:17:51.090 --> 00:17:52.070 is called the expansion,
NOTE Confidence: 0.9839322

00:17:52.609 --> 00:17:53.650 and that's the rate of
NOTE Confidence: 0.9839322

00:17:53.650 --> 00:17:55.250 change of the opening in
NOTE Confidence: 0.9839322

00:17:55.250 --> 00:17:56.930 which the animal lives. So,
NOTE Confidence: 0.9839322

00:17:56.930 --> 00:17:57.890 for example, is it like
NOTE Confidence: 0.9839322

00:17:57.890 --> 00:17:59.010 a cylinder? If you were
NOTE Confidence: 0.9839322

00:17:59.010 --> 00:18:00.369 an animal walking into the

NOTE Confidence: 0.9839322

00:18:00.369 --> 00:18:02.285 shell, would it be constant

NOTE Confidence: 0.9839322

00:18:02.285 --> 00:18:03.244 diameter all the way to

NOTE Confidence: 0.9839322

00:18:03.244 --> 00:18:04.125 the from the beginning to

NOTE Confidence: 0.9839322

00:18:04.125 --> 00:18:05.085 the end, or does it

NOTE Confidence: 0.9839322

00:18:05.085 --> 00:18:06.445 get narrower and narrower, and

NOTE Confidence: 0.9839322

00:18:06.445 --> 00:18:07.405 what rate does it get

NOTE Confidence: 0.9839322

00:18:07.405 --> 00:18:07.905 narrower?

NOTE Confidence: 0.9642539

00:18:08.365 --> 00:18:09.585 And if you did this

NOTE Confidence: 0.9642539

00:18:09.804 --> 00:18:11.085 and you allowed all these

NOTE Confidence: 0.9642539

00:18:11.164 --> 00:18:12.125 you allowed, you know, zero

NOTE Confidence: 0.9642539

00:18:12.125 --> 00:18:13.405 to one variation in distance,

NOTE Confidence: 0.9642539

00:18:13.405 --> 00:18:14.445 zero to one variation in

NOTE Confidence: 0.9642539

00:18:14.445 --> 00:18:16.869 translation, normalized distances, zero to

NOTE Confidence: 0.9642539

00:18:16.869 --> 00:18:18.369 one variation in expansion.

NOTE Confidence: 0.98008704

00:18:18.990 --> 00:18:20.109 Raub found that you could

NOTE Confidence: 0.98008704

00:18:20.109 --> 00:18:21.869 array all possible shells in
NOTE Confidence: 0.98008704

00:18:21.869 --> 00:18:22.609 this space.
NOTE Confidence: 0.9789322

00:18:23.390 --> 00:18:24.510 That is to say every
NOTE Confidence: 0.9789322

00:18:24.510 --> 00:18:25.950 shell that had ever that
NOTE Confidence: 0.9789322

00:18:25.950 --> 00:18:27.470 existed or had ever existed,
NOTE Confidence: 0.9789322

00:18:27.470 --> 00:18:28.609 you could find a specific
NOTE Confidence: 0.9789322

00:18:28.670 --> 00:18:29.970 spot in this three-dimensional
NOTE Confidence: 0.99531883

00:18:30.270 --> 00:18:31.330 space and put
NOTE Confidence: 0.98130333

00:18:31.630 --> 00:18:32.085 that
NOTE Confidence: 0.98098165

00:18:32.565 --> 00:18:33.605 shell. But then he made
NOTE Confidence: 0.98098165

00:18:33.605 --> 00:18:34.885 the discovery, which is that
NOTE Confidence: 0.98098165

00:18:34.885 --> 00:18:36.325 actually only a small part
NOTE Confidence: 0.98098165

00:18:36.325 --> 00:18:37.784 of this theoretical morphospace
NOTE Confidence: 0.9981106

00:18:38.565 --> 00:18:39.924 ever had any shells that
NOTE Confidence: 0.9981106

00:18:39.924 --> 00:18:41.605 existed. Of all the shells
NOTE Confidence: 0.9981106

00:18:41.605 --> 00:18:43.385 that could possibly exist,

NOTE Confidence: 0.99957776

00:18:43.845 --> 00:18:45.284 only a tiny fraction of

NOTE Confidence: 0.99957776

00:18:45.284 --> 00:18:47.170 them had ever come into

NOTE Confidence: 0.99957776

00:18:47.470 --> 00:18:47.970 existence.

NOTE Confidence: 0.94286174

00:18:49.630 --> 00:18:50.990 So many types of shells

NOTE Confidence: 0.94286174

00:18:50.990 --> 00:18:53.330 were theoretically conceivable, but nonetheless

NOTE Confidence: 0.89986515

00:18:53.710 --> 00:18:55.010 never had existed.

NOTE Confidence: 0.9668587

00:18:55.710 --> 00:18:57.470 So now imagine that we

NOTE Confidence: 0.9668587

00:18:57.470 --> 00:18:59.410 define some axes for societies,

NOTE Confidence: 0.95937747

00:18:59.794 --> 00:19:01.234 like how friendly the society

NOTE Confidence: 0.95937747

00:19:01.234 --> 00:19:02.914 is. You know, do people

NOTE Confidence: 0.95937747

00:19:02.914 --> 00:19:03.955 have no friends in this

NOTE Confidence: 0.95937747

00:19:03.955 --> 00:19:05.154 society or one friend on

NOTE Confidence: 0.95937747

00:19:05.154 --> 00:19:06.195 average or two or three

NOTE Confidence: 0.95937747

00:19:06.195 --> 00:19:07.075 or five or ten friends

NOTE Confidence: 0.95937747

00:19:07.075 --> 00:19:08.695 on average? Or how cooperative

NOTE Confidence: 0.95937747

00:19:08.755 --> 00:19:09.715 the society is, like, if
NOTE Confidence: 0.95937747

00:19:09.715 --> 00:19:10.755 they're playing a public goods
NOTE Confidence: 0.95937747

00:19:10.755 --> 00:19:11.654 game or an economic
NOTE Confidence: 0.9534284

00:19:11.955 --> 00:19:13.154 dictator game, or many of
NOTE Confidence: 0.9534284

00:19:13.154 --> 00:19:13.875 you may know about these
NOTE Confidence: 0.9534284

00:19:13.875 --> 00:19:15.690 behavioral economics games where you
NOTE Confidence: 0.9534284

00:19:15.690 --> 00:19:17.210 test the altruism or generosity
NOTE Confidence: 0.9534284

00:19:17.210 --> 00:19:18.730 of people. Are they really
NOTE Confidence: 0.9534284

00:19:18.730 --> 00:19:20.010 sociopathic and they don't help
NOTE Confidence: 0.9534284

00:19:20.010 --> 00:19:21.529 anyone, or are they, like,
NOTE Confidence: 0.9534284

00:19:21.529 --> 00:19:22.890 pathetic empaths and they give
NOTE Confidence: 0.9534284

00:19:22.890 --> 00:19:24.330 everything away at the other
NOTE Confidence: 0.9534284

00:19:24.330 --> 00:19:25.609 extreme? And you have that
NOTE Confidence: 0.9534284

00:19:25.609 --> 00:19:26.750 kind of a a range.
NOTE Confidence: 0.9534284

00:19:26.809 --> 00:19:28.090 Or how much hierarchy is
NOTE Confidence: 0.9534284

00:19:28.090 --> 00:19:28.970 in the society? You know,

NOTE Confidence: 0.9534284
00:19:28.970 --> 00:19:30.350 are they really despotic
NOTE Confidence: 0.96209675
00:19:30.765 --> 00:19:32.205 hierarchy, or are they completely
NOTE Confidence: 0.96209675
00:19:32.205 --> 00:19:33.725 egalitarian? And if you could
NOTE Confidence: 0.96209675
00:19:33.725 --> 00:19:35.484 imagine all these relevant axes
NOTE Confidence: 0.96209675
00:19:35.484 --> 00:19:36.525 to social life and you
NOTE Confidence: 0.96209675
00:19:36.605 --> 00:19:38.125 it created a morphospace in
NOTE Confidence: 0.96209675
00:19:38.125 --> 00:19:39.265 three or more dimensions,
NOTE Confidence: 0.99950236
00:19:39.565 --> 00:19:40.605 it would turn out that
NOTE Confidence: 0.99950236
00:19:40.605 --> 00:19:41.825 all human societies
NOTE Confidence: 0.99932957
00:19:42.605 --> 00:19:44.145 occupy a tiny fraction
NOTE Confidence: 0.9970375
00:19:44.445 --> 00:19:45.345 of this morphospace.
NOTE Confidence: 0.914698
00:19:46.330 --> 00:19:47.710 And the question is why
NOTE Confidence: 0.9826282
00:19:48.330 --> 00:19:49.690 is that the case? And
NOTE Confidence: 0.9826282
00:19:49.690 --> 00:19:51.630 the answer is natural selection.
NOTE Confidence: 0.9842621
00:19:52.890 --> 00:19:54.410 The key capacities that we
NOTE Confidence: 0.9842621

00:19:54.410 --> 00:19:56.570 humans have that characterize our

NOTE Confidence: 0.9842621

00:19:56.570 --> 00:19:57.070 societies

NOTE Confidence: 0.97570384

00:19:57.450 --> 00:19:58.730 and that we need so

NOTE Confidence: 0.97570384

00:19:58.730 --> 00:19:59.530 as to be able to

NOTE Confidence: 0.97570384

00:19:59.530 --> 00:20:01.050 form a functional society, in

NOTE Confidence: 0.97570384

00:20:01.050 --> 00:20:01.710 my judgment,

NOTE Confidence: 0.9950533

00:20:02.044 --> 00:20:03.085 are these eight that are

NOTE Confidence: 0.9950533

00:20:03.085 --> 00:20:04.525 listed here that I call

NOTE Confidence: 0.9950533

00:20:04.525 --> 00:20:06.284 the social suite. This is

NOTE Confidence: 0.9950533

00:20:06.284 --> 00:20:06.784 identity,

NOTE Confidence: 0.99920595

00:20:07.565 --> 00:20:08.065 love,

NOTE Confidence: 0.9983839

00:20:08.525 --> 00:20:09.025 friendship,

NOTE Confidence: 0.9994575

00:20:09.804 --> 00:20:10.304 networks,

NOTE Confidence: 0.99399924

00:20:10.924 --> 00:20:11.424 cooperation,

NOTE Confidence: 0.9751684

00:20:12.205 --> 00:20:13.404 in group preference, that's the

NOTE Confidence: 0.9751684

00:20:13.404 --> 00:20:14.445 one that depresses me the

NOTE Confidence: 0.9751684
00:20:14.445 --> 00:20:14.945 most,
NOTE Confidence: 0.9724772
00:20:15.645 --> 00:20:16.625 mild hierarchy,
NOTE Confidence: 0.98591954
00:20:17.400 --> 00:20:18.140 and teaching.
NOTE Confidence: 0.9998267
00:20:19.160 --> 00:20:21.180 These are genetically encoded attributes
NOTE Confidence: 0.9781854
00:20:21.720 --> 00:20:23.720 shaped by natural selection that
NOTE Confidence: 0.9781854
00:20:23.720 --> 00:20:25.260 we express among ourselves,
NOTE Confidence: 0.9995147
00:20:25.800 --> 00:20:27.340 not as isolated individuals.
NOTE Confidence: 0.98896307
00:20:27.800 --> 00:20:28.760 So I call my lab
NOTE Confidence: 0.98896307
00:20:28.760 --> 00:20:30.040 the human nature lab, and
NOTE Confidence: 0.98896307
00:20:30.040 --> 00:20:31.160 I'm interested in that part
NOTE Confidence: 0.98896307
00:20:31.160 --> 00:20:32.595 of human nature that we
NOTE Confidence: 0.98896307
00:20:32.595 --> 00:20:33.655 express interpersonally.
NOTE Confidence: 0.96677613
00:20:34.675 --> 00:20:35.715 So there are many parts
NOTE Confidence: 0.96677613
00:20:35.715 --> 00:20:36.595 of human nature that we
NOTE Confidence: 0.96677613
00:20:36.595 --> 00:20:38.054 express just in by ourselves.
NOTE Confidence: 0.96677613

00:20:38.195 --> 00:20:39.234 You know, for example, your
NOTE Confidence: 0.96677613

00:20:39.234 --> 00:20:41.175 risk aversion or your bravery
NOTE Confidence: 0.9776979

00:20:41.554 --> 00:20:43.635 or your pancreatic function. You
NOTE Confidence: 0.9776979

00:20:43.635 --> 00:20:44.835 know, those are things that
NOTE Confidence: 0.9776979

00:20:44.835 --> 00:20:46.500 you express as individuals, right,
NOTE Confidence: 0.9776979

00:20:46.500 --> 00:20:47.140 that you can do by
NOTE Confidence: 0.9776979

00:20:47.140 --> 00:20:48.760 yourself. Doesn't need someone else.
NOTE Confidence: 0.9776979

00:20:48.900 --> 00:20:49.700 But, you know, things like
NOTE Confidence: 0.9776979

00:20:49.780 --> 00:20:50.980 that are listed here, like
NOTE Confidence: 0.9776979

00:20:50.980 --> 00:20:52.500 cooperation. You don't cooperate with
NOTE Confidence: 0.9776979

00:20:52.500 --> 00:20:54.340 yourself. You don't befriend yourself.
NOTE Confidence: 0.9776979

00:20:54.340 --> 00:20:55.540 Right? You don't, you know,
NOTE Confidence: 0.9776979

00:20:55.540 --> 00:20:56.580 love yourself. I mean, you
NOTE Confidence: 0.9776979

00:20:56.580 --> 00:20:57.380 can, but that's not what
NOTE Confidence: 0.9776979

00:20:57.380 --> 00:20:58.359 I'm talking about.
NOTE Confidence: 0.95953196

00:20:58.820 --> 00:20:59.940 You know, these are things

NOTE Confidence: 0.95953196

00:20:59.940 --> 00:21:01.700 that you express interpersonally. And

NOTE Confidence: 0.95953196

00:21:01.700 --> 00:21:02.200 furthermore,

NOTE Confidence: 0.9794146

00:21:02.895 --> 00:21:03.615 for them to be in

NOTE Confidence: 0.9794146

00:21:03.615 --> 00:21:05.135 my list, they don't don't

NOTE Confidence: 0.9794146

00:21:05.135 --> 00:21:06.415 include things like, you know,

NOTE Confidence: 0.9794146

00:21:06.415 --> 00:21:07.775 types of manners of attire,

NOTE Confidence: 0.9794146

00:21:07.775 --> 00:21:08.895 you know, that all most

NOTE Confidence: 0.9794146

00:21:08.895 --> 00:21:10.015 human societies, you know, cover

NOTE Confidence: 0.9794146

00:21:10.015 --> 00:21:11.615 their genitals, for example. That's

NOTE Confidence: 0.9794146

00:21:11.615 --> 00:21:13.215 not included in the in

NOTE Confidence: 0.9794146

00:21:13.215 --> 00:21:14.494 the social suite because that's

NOTE Confidence: 0.9794146

00:21:14.494 --> 00:21:15.970 not genetically encoded. There aren't

NOTE Confidence: 0.9794146

00:21:15.970 --> 00:21:17.330 specific genes that that, you

NOTE Confidence: 0.9794146

00:21:17.330 --> 00:21:19.009 know, give rise, to that

NOTE Confidence: 0.9794146

00:21:19.009 --> 00:21:20.389 type of behavior. That's culturally,

NOTE Confidence: 0.99899614

00:21:20.769 --> 00:21:21.269 constructed.
NOTE Confidence: 0.9699059

00:21:22.609 --> 00:21:24.450 So so they're genetically encoded
NOTE Confidence: 0.9699059

00:21:24.450 --> 00:21:26.049 attributes shaped by natural selection
NOTE Confidence: 0.9699059

00:21:26.049 --> 00:21:27.585 that we express among ourselves,
NOTE Confidence: 0.9699059

00:21:27.825 --> 00:21:29.424 not as isolated individuals. And
NOTE Confidence: 0.9699059

00:21:29.424 --> 00:21:30.645 in fact, they are adaptively
NOTE Confidence: 0.9699059

00:21:30.784 --> 00:21:31.284 useful,
NOTE Confidence: 0.99969167

00:21:31.664 --> 00:21:32.484 even crucial
NOTE Confidence: 0.84387386

00:21:32.945 --> 00:21:33.605 for making,
NOTE Confidence: 0.9983098

00:21:34.065 --> 00:21:34.885 a society.
NOTE Confidence: 0.8130669

00:21:35.664 --> 00:21:37.205 And indeed natural selection
NOTE Confidence: 0.9849088

00:21:37.585 --> 00:21:38.705 has shaped not just the
NOTE Confidence: 0.9849088

00:21:38.705 --> 00:21:39.904 structure and function of our
NOTE Confidence: 0.9849088

00:21:39.904 --> 00:21:40.230 bodies,
NOTE Confidence: 0.97282875

00:21:40.790 --> 00:21:41.910 not just the structure and
NOTE Confidence: 0.97282875

00:21:41.910 --> 00:21:43.109 function of our minds and,

NOTE Confidence: 0.97282875

00:21:43.109 --> 00:21:44.010 hence, our behaviors,

NOTE Confidence: 0.9935078

00:21:44.390 --> 00:21:45.510 but also the structure and

NOTE Confidence: 0.9935078

00:21:45.510 --> 00:21:46.809 function of our societies.

NOTE Confidence: 0.98795116

00:21:47.109 --> 00:21:48.570 And these traits are universal.

NOTE Confidence: 0.98795116

00:21:48.630 --> 00:21:49.669 They are seen in every

NOTE Confidence: 0.98795116

00:21:49.669 --> 00:21:50.950 society, and I'm gonna spend

NOTE Confidence: 0.98795116

00:21:50.950 --> 00:21:51.990 a little time walking you

NOTE Confidence: 0.98795116

00:21:51.990 --> 00:21:52.790 through some of them, not

NOTE Confidence: 0.98795116

00:21:52.790 --> 00:21:53.530 all of them,

NOTE Confidence: 0.99974513

00:21:53.990 --> 00:21:54.490 today.

NOTE Confidence: 0.9983642

00:21:55.934 --> 00:21:57.135 Now one of the greatest

NOTE Confidence: 0.9983642

00:21:57.135 --> 00:21:57.635 paradoxes

NOTE Confidence: 0.9993495

00:21:58.335 --> 00:22:00.355 about mammalian social life

NOTE Confidence: 0.9993266

00:22:00.815 --> 00:22:02.015 is that the capacity to

NOTE Confidence: 0.9993266

00:22:02.015 --> 00:22:03.315 be a distinctive individual

NOTE Confidence: 0.996637

00:22:03.934 --> 00:22:05.794 is actually an essential predicate

NOTE Confidence: 0.9985717

00:22:06.095 --> 00:22:07.154 for living socially.

NOTE Confidence: 0.9998313

00:22:08.010 --> 00:22:09.390 The ability to express

NOTE Confidence: 0.9995338

00:22:09.850 --> 00:22:11.390 and to recognize individuality

NOTE Confidence: 0.97392696

00:22:12.170 --> 00:22:13.369 only evolves when it is

NOTE Confidence: 0.97392696

00:22:13.369 --> 00:22:13.869 beneficial,

NOTE Confidence: 0.9687568

00:22:14.330 --> 00:22:15.930 and these two capacities are

NOTE Confidence: 0.9687568

00:22:15.930 --> 00:22:17.450 extremely rare in the animal

NOTE Confidence: 0.9687568

00:22:17.450 --> 00:22:18.410 kingdom. In other words, it's

NOTE Confidence: 0.9687568

00:22:18.410 --> 00:22:19.609 uncommon for animals to be

NOTE Confidence: 0.9687568

00:22:19.609 --> 00:22:21.210 able to signal, I am

NOTE Confidence: 0.9687568

00:22:21.210 --> 00:22:22.775 me, Just me. No one

NOTE Confidence: 0.9687568

00:22:22.775 --> 00:22:23.975 else. And for you to

NOTE Confidence: 0.9687568

00:22:23.975 --> 00:22:24.934 be able to detect, that's

NOTE Confidence: 0.9687568

00:22:24.934 --> 00:22:26.615 Nicholas. That's not Ben or

NOTE Confidence: 0.9687568

00:22:26.615 --> 00:22:28.635 someone else. Okay? Or Mark,

NOTE Confidence: 0.94733363

00:22:29.095 --> 00:22:30.295 which is hard to I

NOTE Confidence: 0.94733363

00:22:30.295 --> 00:22:31.015 mean, you can tell me

NOTE Confidence: 0.94733363

00:22:31.015 --> 00:22:32.395 and Mark apart pretty easily.

NOTE Confidence: 0.9738026

00:22:32.934 --> 00:22:34.135 Why? But ask yourself why?

NOTE Confidence: 0.9738026

00:22:34.135 --> 00:22:34.934 Why can you tell me

NOTE Confidence: 0.9738026

00:22:34.934 --> 00:22:36.060 and Mark apart so easily?

NOTE Confidence: 0.9738026

00:22:36.140 --> 00:22:37.180 What what's the what's the

NOTE Confidence: 0.9738026

00:22:37.180 --> 00:22:39.200 evolutionary advantage to that? Right?

NOTE Confidence: 0.9738026

00:22:39.500 --> 00:22:40.640 And it turns out

NOTE Confidence: 0.98833585

00:22:41.260 --> 00:22:42.060 that if you do not

NOTE Confidence: 0.98833585

00:22:42.060 --> 00:22:43.420 want others to attack you

NOTE Confidence: 0.98833585

00:22:43.420 --> 00:22:43.920 mistakenly,

NOTE Confidence: 0.9826161

00:22:44.620 --> 00:22:45.580 or to forget that they

NOTE Confidence: 0.9826161

00:22:45.580 --> 00:22:46.940 had sex with you, or

NOTE Confidence: 0.9826161

00:22:46.940 --> 00:22:48.460 to provide parental care to

NOTE Confidence: 0.9826161

00:22:48.460 --> 00:22:49.740 a different child and to
NOTE Confidence: 0.9826161

00:22:49.740 --> 00:22:51.120 neglect you as an infant,
NOTE Confidence: 0.9633518

00:22:51.565 --> 00:22:52.765 or to neglect to repay
NOTE Confidence: 0.9633518

00:22:52.765 --> 00:22:54.445 your kindness, then it is
NOTE Confidence: 0.9633518

00:22:54.445 --> 00:22:55.805 advantageous to have some way
NOTE Confidence: 0.9633518

00:22:55.805 --> 00:22:57.425 to signal this is me,
NOTE Confidence: 0.9633518

00:22:57.484 --> 00:22:58.845 not someone else, and to
NOTE Confidence: 0.9633518

00:22:58.845 --> 00:23:00.605 have other people recognize the
NOTE Confidence: 0.9633518

00:23:00.605 --> 00:23:01.105 signal.
NOTE Confidence: 0.9988842

00:23:01.484 --> 00:23:03.025 So such social interactions
NOTE Confidence: 0.7756441

00:23:03.484 --> 00:23:03.984 require,
NOTE Confidence: 0.9993328

00:23:04.619 --> 00:23:05.119 paradoxically
NOTE Confidence: 0.99033386

00:23:05.420 --> 00:23:06.700 that we have the ability
NOTE Confidence: 0.99033386

00:23:06.700 --> 00:23:08.080 to communicate our individuality.
NOTE Confidence: 0.99806285

00:23:08.780 --> 00:23:10.060 And in our species, we
NOTE Confidence: 0.99806285

00:23:10.060 --> 00:23:11.340 use our faces for this

NOTE Confidence: 0.99806285

00:23:11.340 --> 00:23:11.840 purpose.

NOTE Confidence: 0.8827984

00:23:12.220 --> 00:23:13.760 So ask yourself why

NOTE Confidence: 0.9764861

00:23:14.060 --> 00:23:14.940 why do we all have

NOTE Confidence: 0.9764861

00:23:14.940 --> 00:23:15.760 different faces?

NOTE Confidence: 0.951991

00:23:17.545 --> 00:23:18.345 Why don't we have we

NOTE Confidence: 0.951991

00:23:18.345 --> 00:23:19.145 could make for have a

NOTE Confidence: 0.951991

00:23:19.145 --> 00:23:20.105 male face and a female

NOTE Confidence: 0.951991

00:23:20.105 --> 00:23:21.244 face to tell the genders

NOTE Confidence: 0.951991

00:23:21.305 --> 00:23:21.805 apart.

NOTE Confidence: 0.97088945

00:23:22.105 --> 00:23:23.065 Or we could have, like,

NOTE Confidence: 0.97088945

00:23:23.065 --> 00:23:24.105 a baby face and then

NOTE Confidence: 0.97088945

00:23:24.105 --> 00:23:25.305 an adolescent face and then

NOTE Confidence: 0.97088945

00:23:25.305 --> 00:23:26.265 an adult face. Like, you

NOTE Confidence: 0.97088945

00:23:26.265 --> 00:23:27.865 would transition, you know, from

NOTE Confidence: 0.97088945

00:23:27.865 --> 00:23:28.825 babyhood to the you would

NOTE Confidence: 0.97088945

00:23:28.825 --> 00:23:29.865 go from the baby face
NOTE Confidence: 0.97088945

00:23:29.865 --> 00:23:31.145 to the adolescent face and
NOTE Confidence: 0.97088945

00:23:31.145 --> 00:23:32.309 so on. But that's not
NOTE Confidence: 0.97088945

00:23:32.309 --> 00:23:33.109 the case. Each of us
NOTE Confidence: 0.97088945

00:23:33.109 --> 00:23:34.470 has a different face, and
NOTE Confidence: 0.97088945

00:23:34.470 --> 00:23:35.830 we can we can recognize
NOTE Confidence: 0.97088945

00:23:35.830 --> 00:23:36.630 this face. And it turns
NOTE Confidence: 0.97088945

00:23:36.630 --> 00:23:38.409 out that the genetic variability
NOTE Confidence: 0.97088945

00:23:38.549 --> 00:23:40.230 that gives us the ability
NOTE Confidence: 0.97088945

00:23:40.230 --> 00:23:41.669 to express different faces is
NOTE Confidence: 0.97088945

00:23:41.669 --> 00:23:42.169 costly.
NOTE Confidence: 0.9876738

00:23:42.470 --> 00:23:43.669 It's not it's not trivial
NOTE Confidence: 0.9876738

00:23:43.669 --> 00:23:44.309 for us to be able
NOTE Confidence: 0.9876738

00:23:44.309 --> 00:23:45.830 to express different faces. It
NOTE Confidence: 0.9876738

00:23:45.830 --> 00:23:46.335 would be,
NOTE Confidence: 0.99289054

00:23:47.534 --> 00:23:48.034 less,

NOTE Confidence: 0.9550298
00:23:48.895 --> 00:23:50.414 demanding from a physiologic and
NOTE Confidence: 0.9550298
00:23:50.414 --> 00:23:51.375 genetic point of view to
NOTE Confidence: 0.9550298
00:23:51.375 --> 00:23:52.095 all have the same kind
NOTE Confidence: 0.9550298
00:23:52.095 --> 00:23:52.815 of face. So it's a
NOTE Confidence: 0.9550298
00:23:52.815 --> 00:23:54.255 evolutionary luxury that we have
NOTE Confidence: 0.9550298
00:23:54.255 --> 00:23:55.615 different faces. And a huge
NOTE Confidence: 0.9550298
00:23:55.615 --> 00:23:56.654 part of our brain, people
NOTE Confidence: 0.9550298
00:23:56.654 --> 00:23:57.315 with prosopagnosia,
NOTE Confidence: 0.98040473
00:23:57.615 --> 00:23:59.375 for example, suffer terribly. Right?
NOTE Confidence: 0.98040473
00:23:59.375 --> 00:24:00.494 It's a condition. A big
NOTE Confidence: 0.98040473
00:24:00.494 --> 00:24:01.554 part of our brain
NOTE Confidence: 0.99157095
00:24:01.960 --> 00:24:03.020 detects the faces.
NOTE Confidence: 0.99716324
00:24:03.320 --> 00:24:04.280 So all of that has
NOTE Confidence: 0.99716324
00:24:04.280 --> 00:24:05.580 evolved for some purpose,
NOTE Confidence: 0.9781712
00:24:06.920 --> 00:24:07.580 in fact.
NOTE Confidence: 0.9660549

00:24:08.040 --> 00:24:10.120 And, and, actually, recent discoveries
NOTE Confidence: 0.9660549

00:24:10.120 --> 00:24:11.080 have shown that the genes
NOTE Confidence: 0.9660549

00:24:11.080 --> 00:24:12.060 that are responsible
NOTE Confidence: 0.950665

00:24:12.360 --> 00:24:13.560 for the different shapes of
NOTE Confidence: 0.950665

00:24:13.560 --> 00:24:15.345 faces we have, ironically, are
NOTE Confidence: 0.950665

00:24:15.345 --> 00:24:16.705 the same genes or that
NOTE Confidence: 0.950665

00:24:16.705 --> 00:24:17.905 play a role in the
NOTE Confidence: 0.950665

00:24:17.905 --> 00:24:19.765 the adaptive radiation of Darwinian
NOTE Confidence: 0.950665

00:24:19.905 --> 00:24:21.185 finches. You know, the classic
NOTE Confidence: 0.950665

00:24:21.185 --> 00:24:22.625 result that the finch the
NOTE Confidence: 0.950665

00:24:22.625 --> 00:24:24.305 beaks shape and the Darwin's
NOTE Confidence: 0.950665

00:24:24.305 --> 00:24:25.825 finches on the Galapagos Islands
NOTE Confidence: 0.950665

00:24:25.825 --> 00:24:27.160 were all variable? Well, the
NOTE Confidence: 0.950665

00:24:27.160 --> 00:24:28.440 same genes that give rise
NOTE Confidence: 0.950665

00:24:28.440 --> 00:24:29.720 to different shaped beaks in
NOTE Confidence: 0.950665

00:24:29.720 --> 00:24:31.320 Darwin's finches play a role

NOTE Confidence: 0.950665
00:24:31.320 --> 00:24:33.000 in our having different faces
NOTE Confidence: 0.950665
00:24:33.000 --> 00:24:33.500 actually
NOTE Confidence: 0.93998224
00:24:33.800 --> 00:24:34.300 amazingly.
NOTE Confidence: 0.99925756
00:24:35.000 --> 00:24:36.359 And, another way you can
NOTE Confidence: 0.99925756
00:24:36.359 --> 00:24:37.580 get an insight into this
NOTE Confidence: 0.9963584
00:24:38.359 --> 00:24:38.920 is that,
NOTE Confidence: 0.99909484
00:24:39.400 --> 00:24:40.904 you know, we don't recognize
NOTE Confidence: 0.99909484
00:24:40.904 --> 00:24:42.284 each other from our hands
NOTE Confidence: 0.99909484
00:24:42.505 --> 00:24:43.404 or our knees.
NOTE Confidence: 0.99954784
00:24:43.705 --> 00:24:44.205 Right?
NOTE Confidence: 0.9992389
00:24:44.505 --> 00:24:45.304 So and one of the
NOTE Confidence: 0.9992389
00:24:45.304 --> 00:24:46.345 reasons is that our hands
NOTE Confidence: 0.9992389
00:24:46.345 --> 00:24:47.304 are much more similar. If
NOTE Confidence: 0.9992389
00:24:47.304 --> 00:24:47.945 you took all the men
NOTE Confidence: 0.9992389
00:24:47.945 --> 00:24:48.825 in this room and lined
NOTE Confidence: 0.9992389

00:24:48.825 --> 00:24:50.024 up their hands, they wouldn't

NOTE Confidence: 0.9992389

00:24:50.024 --> 00:24:50.924 be as dissimilar

NOTE Confidence: 0.96407634

00:24:51.304 --> 00:24:52.585 as their faces are or

NOTE Confidence: 0.96407634

00:24:52.585 --> 00:24:53.465 all the women, you know,

NOTE Confidence: 0.96407634

00:24:53.465 --> 00:24:54.345 but men and women have

NOTE Confidence: 0.96407634

00:24:54.345 --> 00:24:55.440 different sized hands. But you

NOTE Confidence: 0.96407634

00:24:55.440 --> 00:24:56.669 could tell the men and

NOTE Confidence: 0.96407634

00:24:56.669 --> 00:24:57.898 women apart pretty easily by

NOTE Confidence: 0.96407634

00:24:57.898 --> 00:24:59.373 their hands, but not, within

NOTE Confidence: 0.96407634

00:24:59.373 --> 00:25:00.848 the sex. And, and and

NOTE Confidence: 0.96407634

00:25:00.848 --> 00:25:02.078 if you study that, what

NOTE Confidence: 0.96407634

00:25:02.078 --> 00:25:03.307 you find is if you

NOTE Confidence: 0.96407634

00:25:03.307 --> 00:25:04.536 plot if you plot the

NOTE Confidence: 0.96407634

00:25:04.536 --> 00:25:05.766 length of a man's hand

NOTE Confidence: 0.96407634

00:25:05.766 --> 00:25:06.995 and the height of a

NOTE Confidence: 0.96407634

00:25:06.995 --> 00:25:08.224 man's hand, and and this

NOTE Confidence: 0.96407634
00:25:08.224 --> 00:25:09.454 is this is not my
NOTE Confidence: 0.96407634
00:25:09.454 --> 00:25:10.683 work. This is work done
NOTE Confidence: 0.96407634
00:25:10.683 --> 00:25:11.655 by others of, like, you
NOTE Confidence: 0.96407634
00:25:11.655 --> 00:25:13.494 know, a hundred thousand military
NOTE Confidence: 0.96407634
00:25:13.494 --> 00:25:13.994 conscripts,
NOTE Confidence: 0.9962757
00:25:14.295 --> 00:25:15.175 you find that there's a
NOTE Confidence: 0.9962757
00:25:15.175 --> 00:25:16.155 very tight correlation
NOTE Confidence: 0.98054117
00:25:16.535 --> 00:25:17.575 between the length of a
NOTE Confidence: 0.98054117
00:25:17.575 --> 00:25:18.775 man's hand and the height
NOTE Confidence: 0.98054117
00:25:18.775 --> 00:25:19.815 of his hand. If you
NOTE Confidence: 0.98054117
00:25:19.815 --> 00:25:20.855 plot the points, you get,
NOTE Confidence: 0.98054117
00:25:20.855 --> 00:25:22.055 like, a nice line that
NOTE Confidence: 0.98054117
00:25:22.055 --> 00:25:23.175 goes up diagonally. As one
NOTE Confidence: 0.98054117
00:25:23.175 --> 00:25:24.135 gets bigger, the other gets
NOTE Confidence: 0.98054117
00:25:24.135 --> 00:25:25.095 bigger. Is everyone with me
NOTE Confidence: 0.98054117

00:25:25.095 --> 00:25:26.320 still? But if you did
NOTE Confidence: 0.98054117

00:25:26.320 --> 00:25:27.759 that with people's noses, looking
NOTE Confidence: 0.98054117

00:25:27.759 --> 00:25:28.320 at the height of their
NOTE Confidence: 0.98054117

00:25:28.320 --> 00:25:29.200 nose and the width of
NOTE Confidence: 0.98054117

00:25:29.200 --> 00:25:30.899 their nose, there's no pattern
NOTE Confidence: 0.9654499

00:25:32.480 --> 00:25:34.799 because noses we want maximum
NOTE Confidence: 0.9654499

00:25:34.799 --> 00:25:36.559 variability in noses. We don't
NOTE Confidence: 0.9654499

00:25:36.559 --> 00:25:37.600 want, as your nose gets
NOTE Confidence: 0.9654499

00:25:37.600 --> 00:25:38.320 bigger, for it to get
NOTE Confidence: 0.9654499

00:25:38.320 --> 00:25:39.600 wider. We want all parts
NOTE Confidence: 0.9654499

00:25:39.600 --> 00:25:40.639 of the quadrant to be
NOTE Confidence: 0.9654499

00:25:40.639 --> 00:25:41.835 possible. And in fact, the
NOTE Confidence: 0.9654499

00:25:41.835 --> 00:25:42.795 same thing happens with our
NOTE Confidence: 0.9654499

00:25:42.795 --> 00:25:43.915 ears, how far apart the
NOTE Confidence: 0.9654499

00:25:43.915 --> 00:25:44.875 ears are, whether they are
NOTE Confidence: 0.9654499

00:25:44.875 --> 00:25:45.994 attached, how big is the

NOTE Confidence: 0.9654499

00:25:45.994 --> 00:25:48.015 lobe, the forehead size, eyebrows,

NOTE Confidence: 0.9654499

00:25:48.155 --> 00:25:50.475 interocular distance. Every feature of

NOTE Confidence: 0.9654499

00:25:50.475 --> 00:25:52.655 our faces is widely variable.

NOTE Confidence: 0.9654499

00:25:52.715 --> 00:25:53.615 It's not consistent,

NOTE Confidence: 0.99906856

00:25:54.155 --> 00:25:55.295 in a way that vindicates

NOTE Confidence: 0.99906856

00:25:55.434 --> 00:25:56.960 the belief that it serves

NOTE Confidence: 0.99906856

00:25:57.020 --> 00:25:58.240 some kind of a purpose.

NOTE Confidence: 0.9954314

00:26:01.260 --> 00:26:02.960 And another trait is love.

NOTE Confidence: 0.9994539

00:26:03.260 --> 00:26:04.799 Love is a universal trait.

NOTE Confidence: 0.9754452

00:26:05.100 --> 00:26:06.940 Our species is unusual among

NOTE Confidence: 0.9754452

00:26:06.940 --> 00:26:08.220 mammals in that we don't

NOTE Confidence: 0.9754452

00:26:08.220 --> 00:26:09.260 just have sex with our

NOTE Confidence: 0.9754452

00:26:09.260 --> 00:26:11.280 mates, we bond with them.

NOTE Confidence: 0.9754452

00:26:11.494 --> 00:26:13.275 We form a sustained emotional

NOTE Confidence: 0.9754452

00:26:13.335 --> 00:26:14.775 attachment to them. We love

NOTE Confidence: 0.9754452

00:26:14.775 --> 00:26:15.275 them.
NOTE Confidence: 0.9638901

00:26:15.575 --> 00:26:16.775 And love is not essential
NOTE Confidence: 0.9638901

00:26:16.775 --> 00:26:18.055 to mating as most of
NOTE Confidence: 0.9638901

00:26:18.055 --> 00:26:19.734 you know, but we do
NOTE Confidence: 0.9638901

00:26:19.734 --> 00:26:20.395 it anyway.
NOTE Confidence: 0.95879424

00:26:21.015 --> 00:26:21.895 And in part, we do
NOTE Confidence: 0.95879424

00:26:21.895 --> 00:26:22.855 this because it helps us
NOTE Confidence: 0.95879424

00:26:22.855 --> 00:26:23.815 stay raise our young. So
NOTE Confidence: 0.95879424

00:26:23.815 --> 00:26:24.375 in the book, I have
NOTE Confidence: 0.95879424

00:26:24.375 --> 00:26:25.035 an extended,
NOTE Confidence: 0.9928385

00:26:25.655 --> 00:26:26.935 exploration of work done mostly
NOTE Confidence: 0.9928385

00:26:26.935 --> 00:26:28.510 by other scientists on the
NOTE Confidence: 0.9928385

00:26:28.510 --> 00:26:30.050 evolutionary origins of love.
NOTE Confidence: 0.9506458

00:26:31.470 --> 00:26:32.510 And, I mean, I think
NOTE Confidence: 0.9506458

00:26:32.510 --> 00:26:33.710 in this, there's a a
NOTE Confidence: 0.9506458

00:26:33.710 --> 00:26:34.210 very

NOTE Confidence: 0.96125925

00:26:34.750 --> 00:26:35.950 it's a bit sexist, but

NOTE Confidence: 0.96125925

00:26:35.950 --> 00:26:36.750 it I think it's a

NOTE Confidence: 0.96125925

00:26:36.750 --> 00:26:38.290 true statement about the world

NOTE Confidence: 0.96125925

00:26:38.430 --> 00:26:40.109 that, there's an argument about

NOTE Confidence: 0.96125925

00:26:40.109 --> 00:26:41.230 what are the do you

NOTE Confidence: 0.96125925

00:26:41.230 --> 00:26:41.869 guys know about,

NOTE Confidence: 0.9758988

00:26:43.184 --> 00:26:44.484 something called acceptations?

NOTE Confidence: 0.93228376

00:26:44.865 --> 00:26:45.984 People know what an acceptate

NOTE Confidence: 0.93228376

00:26:46.225 --> 00:26:47.264 it this a classic example

NOTE Confidence: 0.93228376

00:26:47.264 --> 00:26:48.625 of an acceptance is,

NOTE Confidence: 0.9873641

00:26:49.105 --> 00:26:51.024 feathers in dinosaurs, which probably

NOTE Confidence: 0.9873641

00:26:51.024 --> 00:26:52.784 initially appear in order to

NOTE Confidence: 0.9873641

00:26:52.784 --> 00:26:53.984 insulate the body of the

NOTE Confidence: 0.9873641

00:26:53.984 --> 00:26:56.244 dinosaurs, but then were available

NOTE Confidence: 0.9873641

00:26:56.544 --> 00:26:58.440 for use in flight. So

NOTE Confidence: 0.9873641

00:26:58.440 --> 00:27:00.200 we evolved to fly by
NOTE Confidence: 0.9873641

00:27:00.200 --> 00:27:01.500 exploiting the preexisting
NOTE Confidence: 0.9739952

00:27:02.119 --> 00:27:03.960 emergence of feathers. So the
NOTE Confidence: 0.9739952

00:27:03.960 --> 00:27:05.820 feathers were an acceptance.
NOTE Confidence: 0.9436245

00:27:06.119 --> 00:27:06.619 Okay?
NOTE Confidence: 0.97891355

00:27:07.240 --> 00:27:08.440 So so the argument is
NOTE Confidence: 0.97891355

00:27:08.440 --> 00:27:09.320 where does love come from
NOTE Confidence: 0.97891355

00:27:09.320 --> 00:27:10.139 in our species?
NOTE Confidence: 0.9619015

00:27:10.519 --> 00:27:11.720 And there's some evidence, which
NOTE Confidence: 0.9619015

00:27:11.720 --> 00:27:13.899 is very interesting, that, the
NOTE Confidence: 0.9619015

00:27:14.095 --> 00:27:15.695 experience of love in men
NOTE Confidence: 0.9619015

00:27:15.695 --> 00:27:18.275 and women originated from different,
NOTE Confidence: 0.85914636

00:27:18.815 --> 00:27:19.715 neural circuits.
NOTE Confidence: 0.89136344

00:27:20.095 --> 00:27:21.455 And that in, in in
NOTE Confidence: 0.89136344

00:27:21.455 --> 00:27:22.995 this and that in women,
NOTE Confidence: 0.96839964

00:27:23.455 --> 00:27:25.055 initially, women evolved to love

NOTE Confidence: 0.96839964
00:27:25.055 --> 00:27:26.255 their babies, to be attached
NOTE Confidence: 0.96839964
00:27:26.255 --> 00:27:27.155 to their babies.
NOTE Confidence: 0.98063946
00:27:27.490 --> 00:27:28.369 And that was like the
NOTE Confidence: 0.98063946
00:27:28.369 --> 00:27:29.570 feathers in a dinosaur then
NOTE Confidence: 0.98063946
00:27:29.570 --> 00:27:30.769 was used for flight, was
NOTE Confidence: 0.98063946
00:27:30.769 --> 00:27:32.070 used to love their partners.
NOTE Confidence: 0.97423756
00:27:32.369 --> 00:27:33.809 So so the love that
NOTE Confidence: 0.97423756
00:27:33.809 --> 00:27:35.590 women feel in heterosexual couples
NOTE Confidence: 0.97423756
00:27:35.649 --> 00:27:36.789 for their male partners
NOTE Confidence: 0.9029238
00:27:37.169 --> 00:27:38.690 is is an acceptance of
NOTE Confidence: 0.9029238
00:27:38.690 --> 00:27:39.750 the love of babies.
NOTE Confidence: 0.94649714
00:27:40.424 --> 00:27:41.625 And men, it is argued
NOTE Confidence: 0.94649714
00:27:41.625 --> 00:27:43.565 originally in our primate past,
NOTE Confidence: 0.862087
00:27:44.105 --> 00:27:45.544 evolved an attachment to their
NOTE Confidence: 0.862087
00:27:45.544 --> 00:27:46.044 territory,
NOTE Confidence: 0.9936675

00:27:47.065 --> 00:27:48.365 and that this territoriality
NOTE Confidence: 0.97037303

00:27:48.744 --> 00:27:50.024 was then the predicate for
NOTE Confidence: 0.97037303

00:27:50.024 --> 00:27:52.184 the evolution of love male
NOTE Confidence: 0.97037303

00:27:52.184 --> 00:27:53.850 love for women. K. Now
NOTE Confidence: 0.97037303

00:27:53.929 --> 00:27:54.730 I did not make up
NOTE Confidence: 0.97037303

00:27:54.730 --> 00:27:56.410 all this, this work. I'm
NOTE Confidence: 0.97037303

00:27:56.410 --> 00:27:57.690 just summarizing this work and
NOTE Confidence: 0.97037303

00:27:57.690 --> 00:27:59.070 going on a dangerous aggression
NOTE Confidence: 0.97037303

00:27:59.130 --> 00:28:00.410 in any audience, but I
NOTE Confidence: 0.97037303

00:28:00.410 --> 00:28:01.609 think there's some truth to
NOTE Confidence: 0.97037303

00:28:01.609 --> 00:28:03.049 this that that there is
NOTE Confidence: 0.97037303

00:28:03.049 --> 00:28:04.570 an evolutionary predicates for the
NOTE Confidence: 0.97037303

00:28:04.730 --> 00:28:06.429 that the attachment we feel,
NOTE Confidence: 0.9850829

00:28:07.130 --> 00:28:08.330 for our partners that we
NOTE Confidence: 0.9850829

00:28:08.330 --> 00:28:09.150 didn't necessarily,
NOTE Confidence: 0.98764366

00:28:09.945 --> 00:28:11.065 have to have, but we

NOTE Confidence: 0.98764366

00:28:11.065 --> 00:28:12.585 do. Love is not essential

NOTE Confidence: 0.98764366

00:28:12.585 --> 00:28:13.625 for mating, but we do

NOTE Confidence: 0.98764366

00:28:13.625 --> 00:28:15.145 it anyway. And the reasons

NOTE Confidence: 0.98764366

00:28:15.145 --> 00:28:16.184 are that it helps us

NOTE Confidence: 0.98764366

00:28:16.184 --> 00:28:17.225 to raise our young. The

NOTE Confidence: 0.98764366

00:28:17.225 --> 00:28:19.065 sentimental attachment we have with

NOTE Confidence: 0.98764366

00:28:19.065 --> 00:28:20.025 the people with whom we

NOTE Confidence: 0.98764366

00:28:20.025 --> 00:28:20.525 reproduce

NOTE Confidence: 0.9669789

00:28:20.984 --> 00:28:23.065 is actually life prolonging for

NOTE Confidence: 0.9669789

00:28:23.065 --> 00:28:23.885 our offspring,

NOTE Confidence: 0.9595091

00:28:24.470 --> 00:28:25.590 makes them more likely to

NOTE Confidence: 0.9595091

00:28:25.590 --> 00:28:27.030 survive. And that's the argument

NOTE Confidence: 0.9595091

00:28:27.030 --> 00:28:27.910 as to why we evolve

NOTE Confidence: 0.9595091

00:28:27.910 --> 00:28:29.130 the capacity for love.

NOTE Confidence: 0.9835446

00:28:29.910 --> 00:28:31.430 And even though marriage systems

NOTE Confidence: 0.9835446

00:28:31.430 --> 00:28:32.470 vary around the world as
NOTE Confidence: 0.9835446

00:28:32.470 --> 00:28:34.710 shown here, this fundamental fact
NOTE Confidence: 0.9835446

00:28:34.710 --> 00:28:36.310 of bonding and love does
NOTE Confidence: 0.9835446

00:28:36.310 --> 00:28:36.970 not vary.
NOTE Confidence: 0.96764076

00:28:37.405 --> 00:28:39.025 So in monogamous or polygynous
NOTE Confidence: 0.96764076

00:28:39.165 --> 00:28:40.945 couples or polyandrous couples,
NOTE Confidence: 0.9703232

00:28:41.725 --> 00:28:42.684 it's not the number of
NOTE Confidence: 0.9703232

00:28:42.684 --> 00:28:43.805 partners you have. It's the
NOTE Confidence: 0.9703232

00:28:43.805 --> 00:28:45.245 attachment you have to each
NOTE Confidence: 0.9703232

00:28:45.245 --> 00:28:46.925 of them that's the important
NOTE Confidence: 0.9703232

00:28:46.925 --> 00:28:48.045 thing that you feel the
NOTE Confidence: 0.9703232

00:28:48.045 --> 00:28:50.045 sentimental attachment. You don't just,
NOTE Confidence: 0.9703232

00:28:50.365 --> 00:28:52.465 sexually reproduce with that person.
NOTE Confidence: 0.9979211

00:28:54.080 --> 00:28:55.300 Now one of the interesting
NOTE Confidence: 0.9956089

00:28:57.840 --> 00:28:59.700 things about all this
NOTE Confidence: 0.9754416

00:29:01.040 --> 00:29:01.840 is that we don't just

NOTE Confidence: 0.9754416

00:29:01.840 --> 00:29:03.440 mate with each other, we

NOTE Confidence: 0.9754416

00:29:03.440 --> 00:29:04.660 befriend each other.

NOTE Confidence: 0.9846233

00:29:04.960 --> 00:29:05.920 Now we're coming to the

NOTE Confidence: 0.9846233

00:29:05.920 --> 00:29:06.720 kind of work that I've

NOTE Confidence: 0.9846233

00:29:06.720 --> 00:29:07.600 been doing for the last

NOTE Confidence: 0.9846233

00:29:07.600 --> 00:29:09.434 twenty five years. Because humans

NOTE Confidence: 0.9846233

00:29:09.434 --> 00:29:11.054 are unusual as a species

NOTE Confidence: 0.901281

00:29:11.355 --> 00:29:13.135 in that we form volitional,

NOTE Confidence: 0.91544324

00:29:14.075 --> 00:29:15.695 long term, nonreproductive

NOTE Confidence: 0.9994869

00:29:16.235 --> 00:29:16.735 unions

NOTE Confidence: 0.95832807

00:29:17.115 --> 00:29:18.495 with unrelated individuals.

NOTE Confidence: 0.9111223

00:29:18.955 --> 00:29:19.455 Volitional,

NOTE Confidence: 0.9572554

00:29:19.835 --> 00:29:22.475 long term, nonreproductive unions with

NOTE Confidence: 0.9572554

00:29:22.475 --> 00:29:23.534 unrelated individuals,

NOTE Confidence: 0.9390057

00:29:24.000 --> 00:29:25.600 namely we have friends. That's

NOTE Confidence: 0.9390057

00:29:25.600 --> 00:29:26.500 like the scientific,
NOTE Confidence: 0.99991405

00:29:27.120 --> 00:29:27.620 definition
NOTE Confidence: 0.95322543

00:29:28.080 --> 00:29:29.380 of, of friendship.
NOTE Confidence: 0.9521159

00:29:29.920 --> 00:29:31.280 And, and this is seen
NOTE Confidence: 0.9521159

00:29:31.280 --> 00:29:32.880 in every society. There is
NOTE Confidence: 0.9521159

00:29:32.880 --> 00:29:34.160 not a society on Earth
NOTE Confidence: 0.9521159

00:29:34.160 --> 00:29:36.400 that where where, the, the
NOTE Confidence: 0.9521159

00:29:36.400 --> 00:29:36.900 animals,
NOTE Confidence: 0.9815061

00:29:37.360 --> 00:29:38.820 don't, have friends.
NOTE Confidence: 0.9959333

00:29:39.905 --> 00:29:41.505 And the key attributes of
NOTE Confidence: 0.9959333

00:29:41.505 --> 00:29:43.265 friendship are also quite and
NOTE Confidence: 0.9959333

00:29:43.265 --> 00:29:43.905 so as part of the
NOTE Confidence: 0.9959333

00:29:43.905 --> 00:29:45.044 work I did for that,
NOTE Confidence: 0.9959333

00:29:45.105 --> 00:29:46.225 there there's a famous,
NOTE Confidence: 0.9751593

00:29:46.784 --> 00:29:48.544 a corpus of ethnographies that
NOTE Confidence: 0.9751593

00:29:48.544 --> 00:29:49.985 have been written by traditional

NOTE Confidence: 0.9751593

00:29:49.985 --> 00:29:51.265 societies all around the world.

NOTE Confidence: 0.9751593

00:29:51.265 --> 00:29:51.905 You can look at all

NOTE Confidence: 0.9751593

00:29:51.905 --> 00:29:53.460 those ethnographies. You can systematically

NOTE Confidence: 0.9751593

00:29:53.460 --> 00:29:54.500 study them, and you can

NOTE Confidence: 0.9751593

00:29:54.500 --> 00:29:55.460 see how common is it

NOTE Confidence: 0.9751593

00:29:55.460 --> 00:29:56.340 the case that there's a

NOTE Confidence: 0.9751593

00:29:56.340 --> 00:29:57.940 society without friendship or, by

NOTE Confidence: 0.9751593

00:29:57.940 --> 00:29:58.980 the way, a society without

NOTE Confidence: 0.9751593

00:29:58.980 --> 00:30:00.340 play. There's, I think, one

NOTE Confidence: 0.9751593

00:30:00.340 --> 00:30:02.179 documented society where when children

NOTE Confidence: 0.9751593

00:30:02.179 --> 00:30:03.140 try to play, the parents

NOTE Confidence: 0.9751593

00:30:03.140 --> 00:30:04.440 will, like, burn their hands

NOTE Confidence: 0.9751593

00:30:04.500 --> 00:30:05.720 to keep them from playing,

NOTE Confidence: 0.9218149

00:30:06.145 --> 00:30:07.505 which there's that's another whole

NOTE Confidence: 0.9218149

00:30:07.505 --> 00:30:08.885 digression I could go on,

NOTE Confidence: 0.9330384

00:30:09.825 --> 00:30:11.105 but I won't. Resist the
NOTE Confidence: 0.9330384

00:30:11.105 --> 00:30:12.625 temptation. But, anyway, so,
NOTE Confidence: 0.9632041

00:30:13.265 --> 00:30:14.705 so friendship is common, and
NOTE Confidence: 0.9632041

00:30:14.705 --> 00:30:15.905 the attributes of and are
NOTE Confidence: 0.9632041

00:30:15.905 --> 00:30:17.184 universal. And the key attributes
NOTE Confidence: 0.9632041

00:30:17.184 --> 00:30:18.465 of friendship are also quite
NOTE Confidence: 0.9632041

00:30:18.465 --> 00:30:20.040 consistent around the world, and
NOTE Confidence: 0.9632041

00:30:20.040 --> 00:30:21.720 they include, for example, mutual
NOTE Confidence: 0.9632041

00:30:21.720 --> 00:30:23.320 aid. It feels very natural
NOTE Confidence: 0.9632041

00:30:23.320 --> 00:30:24.040 to you that you would
NOTE Confidence: 0.9632041

00:30:24.040 --> 00:30:25.240 help your friends. Right? That
NOTE Confidence: 0.9632041

00:30:25.240 --> 00:30:25.960 that's one of the key
NOTE Confidence: 0.9632041

00:30:25.960 --> 00:30:27.320 attributes of friendship. And then
NOTE Confidence: 0.9632041

00:30:27.320 --> 00:30:28.520 in fact, most of you
NOTE Confidence: 0.9632041

00:30:28.520 --> 00:30:29.900 would actually take satisfaction
NOTE Confidence: 0.9795956

00:30:30.360 --> 00:30:31.720 in your friends doing well.

NOTE Confidence: 0.9795956
00:30:31.720 --> 00:30:32.600 Right? Like, the mark of
NOTE Confidence: 0.9795956
00:30:32.600 --> 00:30:33.580 a true friend
NOTE Confidence: 0.9950248
00:30:34.095 --> 00:30:34.895 is that you can call
NOTE Confidence: 0.9950248
00:30:34.895 --> 00:30:36.034 them with good news.
NOTE Confidence: 0.96648353
00:30:36.895 --> 00:30:37.934 Right? You can call bad
NOTE Confidence: 0.96648353
00:30:37.934 --> 00:30:39.135 news. It's not the same.
NOTE Confidence: 0.96648353
00:30:39.135 --> 00:30:40.174 My best friend can call
NOTE Confidence: 0.96648353
00:30:40.174 --> 00:30:41.375 me when he's had something
NOTE Confidence: 0.96648353
00:30:41.375 --> 00:30:42.414 good happen to him in
NOTE Confidence: 0.96648353
00:30:42.414 --> 00:30:43.775 the cool confidence that I
NOTE Confidence: 0.96648353
00:30:43.775 --> 00:30:44.815 will not be envious of
NOTE Confidence: 0.96648353
00:30:44.815 --> 00:30:45.855 him, that I'll be happy
NOTE Confidence: 0.96648353
00:30:45.855 --> 00:30:46.815 for him and proud of
NOTE Confidence: 0.96648353
00:30:46.815 --> 00:30:47.775 him for what he has
NOTE Confidence: 0.96648353
00:30:47.775 --> 00:30:48.275 done.
NOTE Confidence: 0.96152204

00:30:48.730 --> 00:30:50.889 And also positive affect. So
NOTE Confidence: 0.96152204

00:30:50.889 --> 00:30:52.269 the kind of positive sensibility
NOTE Confidence: 0.96152204

00:30:52.330 --> 00:30:53.130 we have. And the fact
NOTE Confidence: 0.96152204

00:30:53.130 --> 00:30:54.809 that experiments show that in
NOTE Confidence: 0.96152204

00:30:54.809 --> 00:30:56.029 the company of your friends,
NOTE Confidence: 0.96152204

00:30:56.090 --> 00:30:57.470 your physiology changes.
NOTE Confidence: 0.97827035

00:30:57.850 --> 00:30:58.649 Why do you feel good
NOTE Confidence: 0.97827035

00:30:58.649 --> 00:30:59.450 in the company of your
NOTE Confidence: 0.97827035

00:30:59.450 --> 00:31:00.090 friends? Why do you have
NOTE Confidence: 0.97827035

00:31:00.090 --> 00:31:01.049 that warm glow? Why does
NOTE Confidence: 0.97827035

00:31:01.049 --> 00:31:01.850 your heart rate go down
NOTE Confidence: 0.97827035

00:31:01.850 --> 00:31:03.049 and your systolic blood pressure
NOTE Confidence: 0.97827035

00:31:03.049 --> 00:31:04.035 go down? Why do your
NOTE Confidence: 0.97827035

00:31:04.035 --> 00:31:05.555 immune parameters change when you're
NOTE Confidence: 0.97827035

00:31:05.555 --> 00:31:06.355 in the company of your
NOTE Confidence: 0.97827035

00:31:06.355 --> 00:31:07.955 friends? You evolved to be

NOTE Confidence: 0.97827035

00:31:07.955 --> 00:31:09.635 that way because it is

NOTE Confidence: 0.97827035

00:31:09.635 --> 00:31:11.075 life enhancing to be with

NOTE Confidence: 0.97827035

00:31:11.075 --> 00:31:11.875 your friends. Out on the

NOTE Confidence: 0.97827035

00:31:11.875 --> 00:31:12.375 Savannah,

NOTE Confidence: 0.9624956

00:31:12.675 --> 00:31:13.555 those of us who had

NOTE Confidence: 0.9624956

00:31:13.555 --> 00:31:15.395 friends survived more than those

NOTE Confidence: 0.9624956

00:31:15.395 --> 00:31:16.275 of us who didn't have

NOTE Confidence: 0.9624956

00:31:16.275 --> 00:31:17.870 friends. So we evolved

NOTE Confidence: 0.98491263

00:31:18.170 --> 00:31:20.890 this very unusual phenotype. I

NOTE Confidence: 0.98491263

00:31:20.890 --> 00:31:21.530 should say, by the way,

NOTE Confidence: 0.98491263

00:31:21.530 --> 00:31:22.210 because I didn't say it

NOTE Confidence: 0.98491263

00:31:22.210 --> 00:31:23.070 a moment ago,

NOTE Confidence: 0.97676283

00:31:23.770 --> 00:31:25.290 that this phenotype of friendship

NOTE Confidence: 0.97676283

00:31:25.290 --> 00:31:26.250 is extremely rare in the

NOTE Confidence: 0.97676283

00:31:26.250 --> 00:31:27.690 animal kingdom. We do it.

NOTE Confidence: 0.97676283

00:31:27.690 --> 00:31:29.390 Certain other primates do it.
NOTE Confidence: 0.97676283

00:31:29.554 --> 00:31:30.995 Elephants do it, both Asian
NOTE Confidence: 0.97676283

00:31:30.995 --> 00:31:32.835 and African elephants, and certain
NOTE Confidence: 0.97676283

00:31:32.835 --> 00:31:34.595 cetacean species like dolphins and
NOTE Confidence: 0.97676283

00:31:34.595 --> 00:31:35.955 orcas and sperm whales,
NOTE Confidence: 0.88620734

00:31:36.355 --> 00:31:37.095 have friendships.
NOTE Confidence: 0.96667033

00:31:38.595 --> 00:31:40.355 And, and it's otherwise very
NOTE Confidence: 0.96667033

00:31:40.355 --> 00:31:42.054 rare, in the animal kingdom.
NOTE Confidence: 0.98826617

00:31:43.890 --> 00:31:45.090 Now my lab has fanned
NOTE Confidence: 0.98826617

00:31:45.090 --> 00:31:46.290 out around the world to
NOTE Confidence: 0.98826617

00:31:46.290 --> 00:31:47.890 study friendship and to map
NOTE Confidence: 0.98826617

00:31:47.890 --> 00:31:49.490 the social networks that friendships
NOTE Confidence: 0.98826617

00:31:49.490 --> 00:31:51.170 give rise to. For instance,
NOTE Confidence: 0.98826617

00:31:51.170 --> 00:31:52.530 in one study, we compiled
NOTE Confidence: 0.98826617

00:31:52.530 --> 00:31:54.210 a photographic census of adult
NOTE Confidence: 0.98826617

00:31:54.210 --> 00:31:56.290 Hadza to look, in,

NOTE Confidence: 0.9675092

00:31:56.930 --> 00:31:57.750 to look into,

NOTE Confidence: 0.8864826

00:31:58.130 --> 00:31:59.305 in the field. So we

NOTE Confidence: 0.8864826

00:31:59.385 --> 00:32:01.065 they're only the Hadza are

NOTE Confidence: 0.8864826

00:32:01.065 --> 00:32:02.285 people who live in Tanzania.

NOTE Confidence: 0.9272569

00:32:02.745 --> 00:32:04.425 They, live like all humans

NOTE Confidence: 0.9272569

00:32:04.425 --> 00:32:05.645 did until in the Pleistocene.

NOTE Confidence: 0.9919313

00:32:06.025 --> 00:32:07.065 They hunt and they gather

NOTE Confidence: 0.9919313

00:32:07.065 --> 00:32:07.865 for their food. They live

NOTE Confidence: 0.9919313

00:32:07.865 --> 00:32:09.245 in our ancestral environments

NOTE Confidence: 0.97892046

00:32:09.545 --> 00:32:11.165 around Lake Ayase in Tanzania.

NOTE Confidence: 0.96601444

00:32:11.600 --> 00:32:12.560 They sleep out under the

NOTE Confidence: 0.96601444

00:32:12.560 --> 00:32:13.440 stars. They have very few

NOTE Confidence: 0.96601444

00:32:13.440 --> 00:32:15.280 material possessions. Every six weeks,

NOTE Confidence: 0.96601444

00:32:15.280 --> 00:32:16.160 they move camp. There are

NOTE Confidence: 0.96601444

00:32:16.160 --> 00:32:17.120 only about a thousand of

NOTE Confidence: 0.96601444

00:32:17.120 --> 00:32:18.400 them left. We made a
NOTE Confidence: 0.96601444

00:32:18.400 --> 00:32:20.080 photographic census of all living
NOTE Confidence: 0.96601444

00:32:20.080 --> 00:32:21.680 adult Hadza, printed them on
NOTE Confidence: 0.96601444

00:32:21.680 --> 00:32:22.640 posters like a kind of
NOTE Confidence: 0.96601444

00:32:22.640 --> 00:32:24.045 Hadza Facebook, and and we
NOTE Confidence: 0.96601444

00:32:24.045 --> 00:32:25.185 took it into the field.
NOTE Confidence: 0.96601444

00:32:25.405 --> 00:32:26.925 And then my my postdoc
NOTE Confidence: 0.96601444

00:32:26.925 --> 00:32:28.225 at the time, Corinne Apicella,
NOTE Confidence: 0.96601444

00:32:28.285 --> 00:32:29.405 this paper was published in
NOTE Confidence: 0.96601444

00:32:29.405 --> 00:32:30.625 Nature in twenty twelve.
NOTE Confidence: 0.7694295

00:32:31.005 --> 00:32:32.125 My postdoc at the time
NOTE Confidence: 0.7694295

00:32:32.125 --> 00:32:32.965 who's now a professor at
NOTE Confidence: 0.7694295

00:32:32.965 --> 00:32:33.505 the University
NOTE Confidence: 0.9617039

00:32:34.045 --> 00:32:34.625 of Pennsylvania,
NOTE Confidence: 0.96447295

00:32:35.725 --> 00:32:37.085 she just set up camp
NOTE Confidence: 0.96447295

00:32:37.085 --> 00:32:38.650 around Lake Ayase and just

NOTE Confidence: 0.96447295

00:32:38.650 --> 00:32:39.450 would wait there for a

NOTE Confidence: 0.96447295

00:32:39.450 --> 00:32:40.330 Hadza. You know, you can't

NOTE Confidence: 0.96447295

00:32:40.330 --> 00:32:41.210 make an appointment with a

NOTE Confidence: 0.96447295

00:32:41.210 --> 00:32:42.570 Hadza person. You just have

NOTE Confidence: 0.96447295

00:32:42.570 --> 00:32:43.290 to wait till you bump

NOTE Confidence: 0.96447295

00:32:43.290 --> 00:32:44.410 into one. And she just

NOTE Confidence: 0.96447295

00:32:44.410 --> 00:32:45.450 would wait till someone would

NOTE Confidence: 0.96447295

00:32:45.450 --> 00:32:46.170 walk by, and she would

NOTE Confidence: 0.96447295

00:32:46.170 --> 00:32:46.970 say, excuse me. Who are

NOTE Confidence: 0.96447295

00:32:46.970 --> 00:32:48.010 your friends? And they would

NOTE Confidence: 0.96447295

00:32:48.010 --> 00:32:49.290 identify their friends. And off

NOTE Confidence: 0.96447295

00:32:49.290 --> 00:32:50.010 they'd go, and then she'd

NOTE Confidence: 0.96447295

00:32:50.010 --> 00:32:51.205 wait, like, another week for

NOTE Confidence: 0.96447295

00:32:51.205 --> 00:32:52.165 the next person to walk

NOTE Confidence: 0.96447295

00:32:52.165 --> 00:32:53.125 by. And who are your

NOTE Confidence: 0.96447295

00:32:53.125 --> 00:32:53.965 friends? And they would post
NOTE Confidence: 0.96447295

00:32:54.085 --> 00:32:55.045 they were very entertained by
NOTE Confidence: 0.96447295

00:32:55.045 --> 00:32:56.825 this. Who are your friends?
NOTE Confidence: 0.96447295

00:32:56.885 --> 00:32:58.485 And then we slowly map
NOTE Confidence: 0.96447295

00:32:58.485 --> 00:32:59.925 the social networks of the
NOTE Confidence: 0.96447295

00:32:59.925 --> 00:33:00.425 Hadza.
NOTE Confidence: 0.9818249

00:33:00.725 --> 00:33:02.085 And what we found was
NOTE Confidence: 0.9818249

00:33:02.085 --> 00:33:02.965 that when we map the
NOTE Confidence: 0.9818249

00:33:02.965 --> 00:33:04.505 social networks of the Hadza,
NOTE Confidence: 0.9818249

00:33:04.725 --> 00:33:06.245 they looked just like our
NOTE Confidence: 0.9818249

00:33:06.245 --> 00:33:06.990 social networks.
NOTE Confidence: 0.9966344

00:33:07.470 --> 00:33:08.510 That the social networks of
NOTE Confidence: 0.9966344

00:33:08.510 --> 00:33:10.510 the Hadza were mathematically and
NOTE Confidence: 0.9966344

00:33:10.510 --> 00:33:11.809 visually indistinguishable
NOTE Confidence: 0.9993223

00:33:12.429 --> 00:33:13.790 from the structure of social
NOTE Confidence: 0.9993223

00:33:13.790 --> 00:33:15.230 networks made in modern American

NOTE Confidence: 0.9993223

00:33:15.230 --> 00:33:15.730 society.

NOTE Confidence: 0.99766356

00:33:16.030 --> 00:33:16.910 So even though in the

NOTE Confidence: 0.99766356

00:33:16.910 --> 00:33:18.670 intervening ten thousand years, we've

NOTE Confidence: 0.99766356

00:33:18.670 --> 00:33:19.170 invented

NOTE Confidence: 0.9709681

00:33:19.625 --> 00:33:21.785 agriculture, we've invented cities, we've

NOTE Confidence: 0.9709681

00:33:21.785 --> 00:33:22.765 invented telecommunications,

NOTE Confidence: 0.9987565

00:33:23.785 --> 00:33:25.725 there's something deep and ancient

NOTE Confidence: 0.9987565

00:33:25.945 --> 00:33:27.145 about the way we make

NOTE Confidence: 0.9987565

00:33:27.145 --> 00:33:28.365 friends that is unaffected

NOTE Confidence: 0.99946433

00:33:28.825 --> 00:33:30.685 by all of those intervening

NOTE Confidence: 0.99946433

00:33:30.905 --> 00:33:31.405 technologies.

NOTE Confidence: 0.9443348

00:33:32.260 --> 00:33:33.080 And in fact,

NOTE Confidence: 0.96014434

00:33:33.380 --> 00:33:34.500 we fanned out now my

NOTE Confidence: 0.96014434

00:33:34.500 --> 00:33:35.700 group and we've mapped networks

NOTE Confidence: 0.96014434

00:33:35.700 --> 00:33:36.820 in many places around the

NOTE Confidence: 0.96014434

00:33:36.820 --> 00:33:38.660 world, in Honduras, in India,
NOTE Confidence: 0.96014434

00:33:38.660 --> 00:33:40.500 in Uganda, in Sudan, in
NOTE Confidence: 0.96014434

00:33:40.500 --> 00:33:42.500 Tanzania, in the United States.
NOTE Confidence: 0.96014434

00:33:42.500 --> 00:33:43.620 And these are villages that
NOTE Confidence: 0.96014434

00:33:43.620 --> 00:33:44.660 we have studied in three
NOTE Confidence: 0.96014434

00:33:44.660 --> 00:33:45.480 different locations.
NOTE Confidence: 0.98136336

00:33:46.005 --> 00:33:47.465 Every dot is a person.
NOTE Confidence: 0.98136336

00:33:47.525 --> 00:33:48.725 Every line is a social
NOTE Confidence: 0.98136336

00:33:48.725 --> 00:33:50.565 relationship between two people. And
NOTE Confidence: 0.98136336

00:33:50.565 --> 00:33:51.285 if you look at these
NOTE Confidence: 0.98136336

00:33:51.285 --> 00:33:52.405 villages, you should instantly be
NOTE Confidence: 0.98136336

00:33:52.405 --> 00:33:53.465 able to say, my goodness,
NOTE Confidence: 0.98136336

00:33:53.525 --> 00:33:54.965 there's something very similar about
NOTE Confidence: 0.98136336

00:33:54.965 --> 00:33:56.485 the social networks in all
NOTE Confidence: 0.98136336

00:33:56.485 --> 00:33:58.505 of those different, locations,
NOTE Confidence: 0.9992189

00:33:58.810 --> 00:34:00.030 different cultural settings,

NOTE Confidence: 0.97897

00:34:00.890 --> 00:34:03.070 different geographic locations, different environmental

NOTE Confidence: 0.97897

00:34:03.210 --> 00:34:04.890 pressures, and yet there's a

NOTE Confidence: 0.97897

00:34:04.890 --> 00:34:05.950 startling consistency

NOTE Confidence: 0.92596436

00:34:06.330 --> 00:34:07.070 and universality

NOTE Confidence: 0.9994795

00:34:07.530 --> 00:34:09.390 to human social network structure.

NOTE Confidence: 0.9036792

00:34:11.225 --> 00:34:12.525 Very permanently, however,

NOTE Confidence: 0.9987526

00:34:13.065 --> 00:34:14.205 elephants and dolphins

NOTE Confidence: 0.9593435

00:34:14.505 --> 00:34:15.565 also have friendships,

NOTE Confidence: 0.9319863

00:34:15.864 --> 00:34:17.305 and their networks look very

NOTE Confidence: 0.9319863

00:34:17.305 --> 00:34:18.665 similar to ours. This is

NOTE Confidence: 0.9319863

00:34:18.665 --> 00:34:20.105 an elephant network, and the

NOTE Confidence: 0.9319863

00:34:20.105 --> 00:34:21.705 friendships among elephants, every god's

NOTE Confidence: 0.9319863

00:34:21.705 --> 00:34:23.065 an elephant, and the lines

NOTE Confidence: 0.9319863

00:34:23.065 --> 00:34:24.600 represent elephant friendships.

NOTE Confidence: 0.9908162

00:34:25.080 --> 00:34:26.280 And there are some differences

NOTE Confidence: 0.9908162

00:34:26.280 --> 00:34:27.660 with the human social networks,

NOTE Confidence: 0.9908162

00:34:27.800 --> 00:34:29.080 but the basic picture is

NOTE Confidence: 0.9908162

00:34:29.080 --> 00:34:30.860 that the networks that elephants

NOTE Confidence: 0.9908162

00:34:31.000 --> 00:34:32.440 make are very similar to

NOTE Confidence: 0.9908162

00:34:32.440 --> 00:34:33.960 the elephants that, that we

NOTE Confidence: 0.9908162

00:34:34.120 --> 00:34:35.640 the elephants the networks that

NOTE Confidence: 0.9908162

00:34:35.640 --> 00:34:37.285 we make. And our last

NOTE Confidence: 0.9908162

00:34:37.285 --> 00:34:38.725 common ancestor with elephants was

NOTE Confidence: 0.9908162

00:34:38.725 --> 00:34:39.844 over eighty five million years

NOTE Confidence: 0.9908162

00:34:39.844 --> 00:34:40.965 ago, and that was a

NOTE Confidence: 0.9908162

00:34:40.965 --> 00:34:42.725 small shrew like animal. So

NOTE Confidence: 0.9908162

00:34:42.725 --> 00:34:43.685 what this means is is

NOTE Confidence: 0.9908162

00:34:43.685 --> 00:34:44.985 that we and the elephants

NOTE Confidence: 0.9524144

00:34:45.525 --> 00:34:46.025 independently

NOTE Confidence: 0.9704619

00:34:46.965 --> 00:34:48.485 have evolved the capacity to

NOTE Confidence: 0.9704619

00:34:48.485 --> 00:34:50.170 make social networks. And by
NOTE Confidence: 0.9704619

00:34:50.170 --> 00:34:51.230 convergent evolution
NOTE Confidence: 0.9687632

00:34:51.530 --> 00:34:52.650 have wound up making the
NOTE Confidence: 0.9687632

00:34:52.650 --> 00:34:54.350 same kind of social networks.
NOTE Confidence: 0.99530596

00:34:56.010 --> 00:34:56.330 And,
NOTE Confidence: 0.9983988

00:34:56.969 --> 00:34:58.270 and and and
NOTE Confidence: 0.9751332

00:34:58.570 --> 00:34:59.770 and and what's amazing to
NOTE Confidence: 0.9751332

00:34:59.770 --> 00:35:01.130 me about this is is
NOTE Confidence: 0.9751332

00:35:01.130 --> 00:35:02.489 the following. So these these
NOTE Confidence: 0.9751332

00:35:02.489 --> 00:35:03.630 are two cute creatures
NOTE Confidence: 0.9586912

00:35:03.995 --> 00:35:04.955 last year at a common
NOTE Confidence: 0.9586912

00:35:04.955 --> 00:35:06.635 ancestor two hundred million years
NOTE Confidence: 0.9586912

00:35:06.635 --> 00:35:07.835 ago that looked nothing like
NOTE Confidence: 0.9586912

00:35:07.835 --> 00:35:09.455 this, and yet they independently
NOTE Confidence: 0.9586912

00:35:09.515 --> 00:35:11.114 involved in such similar ways
NOTE Confidence: 0.9586912

00:35:11.114 --> 00:35:12.235 in the more recent past.

NOTE Confidence: 0.9586912

00:35:12.235 --> 00:35:13.375 This is, an echidna,

NOTE Confidence: 0.9219715

00:35:13.675 --> 00:35:15.614 a marsupial in in, Australia,

NOTE Confidence: 0.969713

00:35:15.915 --> 00:35:16.815 and a hedgehog,

NOTE Confidence: 0.99950457

00:35:17.355 --> 00:35:18.575 shown on the right.

NOTE Confidence: 0.9944754

00:35:19.020 --> 00:35:20.780 Now this observation about convergent

NOTE Confidence: 0.9944754

00:35:20.780 --> 00:35:21.840 evolution of friendship

NOTE Confidence: 0.97387016

00:35:22.140 --> 00:35:23.900 and of social networks leads

NOTE Confidence: 0.97387016

00:35:23.900 --> 00:35:24.960 to another paradox.

NOTE Confidence: 0.9954602

00:35:25.660 --> 00:35:26.940 Because to the extent that

NOTE Confidence: 0.9954602

00:35:26.940 --> 00:35:28.300 we resemble animals in our

NOTE Confidence: 0.9954602

00:35:28.300 --> 00:35:29.520 propensity for friendship

NOTE Confidence: 0.9613982

00:35:29.980 --> 00:35:31.260 or other traits like our

NOTE Confidence: 0.9613982

00:35:31.260 --> 00:35:32.480 capacity for cooperation,

NOTE Confidence: 0.99813277

00:35:33.005 --> 00:35:34.364 we gain insights into our

NOTE Confidence: 0.99813277

00:35:34.364 --> 00:35:35.505 own common humanity.

NOTE Confidence: 0.9912066

00:35:36.364 --> 00:35:37.725 So ironic to me that
NOTE Confidence: 0.9912066

00:35:37.725 --> 00:35:39.245 we can better appreciate what
NOTE Confidence: 0.9912066

00:35:39.245 --> 00:35:40.285 we share in common with
NOTE Confidence: 0.9912066

00:35:40.285 --> 00:35:41.485 each other when we see
NOTE Confidence: 0.9912066

00:35:41.485 --> 00:35:42.525 what we share in common
NOTE Confidence: 0.9912066

00:35:42.525 --> 00:35:43.105 with Griffiths.
NOTE Confidence: 0.9980639

00:35:43.485 --> 00:35:43.985 Right?
NOTE Confidence: 0.98089296

00:35:44.364 --> 00:35:45.245 That, you know, there's more
NOTE Confidence: 0.98089296

00:35:45.245 --> 00:35:46.925 that binds human beings together
NOTE Confidence: 0.98089296

00:35:46.925 --> 00:35:48.360 and cultures around the world
NOTE Confidence: 0.98089296

00:35:48.440 --> 00:35:49.720 in my view than that
NOTE Confidence: 0.98089296

00:35:49.720 --> 00:35:50.540 divides them.
NOTE Confidence: 0.9814773

00:35:51.480 --> 00:35:52.680 Because surely, if we can
NOTE Confidence: 0.9814773

00:35:52.680 --> 00:35:53.960 share the capacity for friendship
NOTE Confidence: 0.9814773

00:35:53.960 --> 00:35:55.320 with elephants, we can share
NOTE Confidence: 0.9814773

00:35:55.320 --> 00:35:56.620 it, as I said, universally

NOTE Confidence: 0.9814773

00:35:56.760 --> 00:35:57.580 with each other.

NOTE Confidence: 0.9979244

00:35:58.840 --> 00:36:00.520 Now the actual structure of

NOTE Confidence: 0.9979244

00:36:00.520 --> 00:36:01.820 our networks matters

NOTE Confidence: 0.9996103

00:36:02.120 --> 00:36:03.260 to our life experience.

NOTE Confidence: 0.9978195

00:36:03.935 --> 00:36:05.795 Think about these two objects.

NOTE Confidence: 0.9978195

00:36:05.855 --> 00:36:06.815 As you all learned in

NOTE Confidence: 0.9978195

00:36:06.815 --> 00:36:08.734 high school chemistry, they're both

NOTE Confidence: 0.9978195

00:36:08.734 --> 00:36:09.635 made of carbon.

NOTE Confidence: 0.9946358

00:36:10.015 --> 00:36:10.895 And if you connect the

NOTE Confidence: 0.9946358

00:36:10.895 --> 00:36:12.575 carbon atoms one way, you

NOTE Confidence: 0.9946358

00:36:12.575 --> 00:36:13.395 get graphite,

NOTE Confidence: 0.9728403

00:36:13.695 --> 00:36:14.255 which is,

NOTE Confidence: 0.9910537

00:36:14.895 --> 00:36:15.395 soft,

NOTE Confidence: 0.9880371

00:36:15.775 --> 00:36:17.375 and dark. And connect the

NOTE Confidence: 0.9880371

00:36:17.375 --> 00:36:19.110 carbon atoms another way, you

NOTE Confidence: 0.9880371

00:36:19.110 --> 00:36:21.030 get diamond, which is hard

NOTE Confidence: 0.9880371

00:36:21.030 --> 00:36:21.770 and clear.

NOTE Confidence: 0.99492383

00:36:22.310 --> 00:36:23.190 And there are two key

NOTE Confidence: 0.99492383

00:36:23.190 --> 00:36:24.570 intellectual ideas here.

NOTE Confidence: 0.9956731

00:36:24.950 --> 00:36:26.710 First of all, these properties

NOTE Confidence: 0.9956731

00:36:26.710 --> 00:36:27.990 of softness and darkness and

NOTE Confidence: 0.9956731

00:36:27.990 --> 00:36:28.970 hardness and clearness

NOTE Confidence: 0.98211753

00:36:29.350 --> 00:36:30.390 are not properties of the

NOTE Confidence: 0.98211753

00:36:30.390 --> 00:36:32.230 carbon atoms. They are properties

NOTE Confidence: 0.98211753

00:36:32.230 --> 00:36:33.350 of the collection of carbon

NOTE Confidence: 0.98211753

00:36:33.350 --> 00:36:34.685 atoms. Atoms. They are properties

NOTE Confidence: 0.98211753

00:36:34.685 --> 00:36:36.205 that emerge from the carbon

NOTE Confidence: 0.98211753

00:36:36.205 --> 00:36:38.285 atoms. And second, which properties

NOTE Confidence: 0.98211753

00:36:38.285 --> 00:36:39.565 you get depends on how

NOTE Confidence: 0.98211753

00:36:39.565 --> 00:36:40.685 you connect the carbon atoms

NOTE Confidence: 0.98211753

00:36:40.685 --> 00:36:41.805 to each other. Take the

NOTE Confidence: 0.98211753
00:36:41.805 --> 00:36:43.085 same carbon atoms and connect
NOTE Confidence: 0.98211753
00:36:43.085 --> 00:36:44.045 them one way, you get
NOTE Confidence: 0.98211753
00:36:44.045 --> 00:36:45.485 one set of properties, connect
NOTE Confidence: 0.98211753
00:36:45.485 --> 00:36:46.605 them another way, and you
NOTE Confidence: 0.98211753
00:36:46.605 --> 00:36:48.045 get a completely different set
NOTE Confidence: 0.98211753
00:36:48.045 --> 00:36:48.785 of properties.
NOTE Confidence: 0.99971116
00:36:49.610 --> 00:36:50.110 Similarly,
NOTE Confidence: 0.9998053
00:36:50.410 --> 00:36:51.790 the pattern of our connections
NOTE Confidence: 0.9992723
00:36:52.090 --> 00:36:53.290 affects the properties of our
NOTE Confidence: 0.9992723
00:36:53.290 --> 00:36:54.110 social groups.
NOTE Confidence: 0.9988312
00:36:54.570 --> 00:36:56.270 It's the ties between people
NOTE Confidence: 0.9988312
00:36:56.330 --> 00:36:57.930 that make the whole greater
NOTE Confidence: 0.9988312
00:36:57.930 --> 00:36:58.730 than the sum of its
NOTE Confidence: 0.9988312
00:36:58.730 --> 00:36:59.230 parts.
NOTE Confidence: 0.9995868
00:36:59.850 --> 00:37:00.590 New properties
NOTE Confidence: 0.94094944

00:37:01.130 --> 00:37:02.510 such as health and happiness
NOTE Confidence: 0.94094944

00:37:02.730 --> 00:37:04.350 and cooperation and innovation
NOTE Confidence: 0.9862628

00:37:05.065 --> 00:37:06.585 can emerge because of the
NOTE Confidence: 0.9862628

00:37:06.585 --> 00:37:08.185 connections, because of the ties
NOTE Confidence: 0.9862628

00:37:08.185 --> 00:37:10.205 between people, and not necessarily
NOTE Confidence: 0.9862628

00:37:10.265 --> 00:37:11.565 because of the people themselves.
NOTE Confidence: 0.9941807

00:37:12.105 --> 00:37:13.065 So it's not just what's
NOTE Confidence: 0.9941807

00:37:13.065 --> 00:37:14.265 happening in the people around
NOTE Confidence: 0.9941807

00:37:14.265 --> 00:37:16.025 us that matters. Our experience
NOTE Confidence: 0.9941807

00:37:16.025 --> 00:37:17.725 of the world also depends
NOTE Confidence: 0.9941807

00:37:17.870 --> 00:37:19.310 on the actual structure of
NOTE Confidence: 0.9941807

00:37:19.310 --> 00:37:21.150 the ties around us near
NOTE Confidence: 0.9941807

00:37:21.150 --> 00:37:21.810 and far.
NOTE Confidence: 0.9560141

00:37:22.190 --> 00:37:23.070 And if I had time,
NOTE Confidence: 0.9560141

00:37:23.070 --> 00:37:24.590 I would show you experiments
NOTE Confidence: 0.9560141

00:37:24.590 --> 00:37:25.710 we've done in my lab

NOTE Confidence: 0.9560141

00:37:25.710 --> 00:37:26.670 where we I could take

NOTE Confidence: 0.9560141

00:37:26.670 --> 00:37:27.950 you guys and I and

NOTE Confidence: 0.9560141

00:37:27.950 --> 00:37:29.070 I and I, you know,

NOTE Confidence: 0.9560141

00:37:29.070 --> 00:37:29.630 I don't know. There are

NOTE Confidence: 0.9560141

00:37:29.630 --> 00:37:30.750 fifty of you over here

NOTE Confidence: 0.9560141

00:37:30.750 --> 00:37:31.790 and imagine I had a

NOTE Confidence: 0.9560141

00:37:31.790 --> 00:37:32.610 hundred connections

NOTE Confidence: 0.9342001

00:37:32.945 --> 00:37:33.905 and I arrange the connections

NOTE Confidence: 0.9342001

00:37:33.905 --> 00:37:35.265 in a particular pattern, and

NOTE Confidence: 0.9342001

00:37:35.265 --> 00:37:36.065 there are fifty of you

NOTE Confidence: 0.9342001

00:37:36.065 --> 00:37:37.105 over here. And I take

NOTE Confidence: 0.9342001

00:37:37.105 --> 00:37:38.785 another hundred connections, and I

NOTE Confidence: 0.9342001

00:37:38.785 --> 00:37:39.505 arrange you in a different

NOTE Confidence: 0.9342001

00:37:39.505 --> 00:37:40.625 pattern. So you're his friend

NOTE Confidence: 0.9342001

00:37:40.625 --> 00:37:41.744 and he's her friend and

NOTE Confidence: 0.9342001

00:37:41.744 --> 00:37:43.125 whatever the pattern I engineer,
NOTE Confidence: 0.9898443

00:37:43.505 --> 00:37:44.805 I could make you guys
NOTE Confidence: 0.9898443

00:37:44.864 --> 00:37:46.325 really sweet to each other.
NOTE Confidence: 0.99597824

00:37:46.640 --> 00:37:47.840 And these guys mean sons
NOTE Confidence: 0.99597824

00:37:47.840 --> 00:37:48.980 of bitches to each other.
NOTE Confidence: 0.98237807

00:37:49.280 --> 00:37:50.340 So same people,
NOTE Confidence: 0.9517666

00:37:50.800 --> 00:37:51.620 different connections,
NOTE Confidence: 0.97075325

00:37:52.080 --> 00:37:53.680 I can cause different properties
NOTE Confidence: 0.97075325

00:37:53.680 --> 00:37:55.120 to emerge just like the
NOTE Confidence: 0.97075325

00:37:55.120 --> 00:37:56.719 darkness and lightness and hardness
NOTE Confidence: 0.97075325

00:37:56.719 --> 00:37:58.400 and clearness. You understand? It's
NOTE Confidence: 0.97075325

00:37:58.400 --> 00:37:59.655 it's not who you are.
NOTE Confidence: 0.97075325

00:37:59.815 --> 00:38:01.575 It's not your your intrinsic
NOTE Confidence: 0.97075325

00:38:01.575 --> 00:38:03.415 cooperate cooperativity or in your
NOTE Confidence: 0.97075325

00:38:03.415 --> 00:38:05.255 intrinsic altruism. It's the pattern
NOTE Confidence: 0.97075325

00:38:05.255 --> 00:38:06.455 of connections between you that

NOTE Confidence: 0.97075325

00:38:06.455 --> 00:38:07.415 can make this group kind

NOTE Confidence: 0.97075325

00:38:07.415 --> 00:38:08.855 and altruistic and this group

NOTE Confidence: 0.97075325

00:38:08.855 --> 00:38:09.915 vicious and mean.

NOTE Confidence: 0.9896414

00:38:10.695 --> 00:38:11.575 So this is one of

NOTE Confidence: 0.9896414

00:38:11.575 --> 00:38:13.015 the arguments about why we

NOTE Confidence: 0.9896414

00:38:13.015 --> 00:38:14.455 evolved to have networks with

NOTE Confidence: 0.9896414

00:38:14.455 --> 00:38:16.200 particular structure optimized

NOTE Confidence: 0.98996127

00:38:17.300 --> 00:38:19.160 for a good society, optimized

NOTE Confidence: 0.98996127

00:38:19.219 --> 00:38:21.219 to advantage us in particular

NOTE Confidence: 0.98996127

00:38:21.219 --> 00:38:21.719 ways

NOTE Confidence: 0.9301455

00:38:22.100 --> 00:38:24.040 because these collective social structures

NOTE Confidence: 0.9301455

00:38:24.260 --> 00:38:25.719 can have emergent properties

NOTE Confidence: 0.94529516

00:38:26.020 --> 00:38:27.300 and social order, which we

NOTE Confidence: 0.94529516

00:38:27.300 --> 00:38:29.239 are prewired to make matters.

NOTE Confidence: 0.9878331

00:38:30.765 --> 00:38:31.805 Now the traits that make

NOTE Confidence: 0.9878331

00:38:31.805 --> 00:38:32.924 up the social suite, as
NOTE Confidence: 0.9878331

00:38:32.924 --> 00:38:34.125 it turns out, are mutually
NOTE Confidence: 0.9878331

00:38:34.125 --> 00:38:35.724 supportive. Many of these play
NOTE Confidence: 0.9878331

00:38:35.724 --> 00:38:37.484 roles in the others. Identity
NOTE Confidence: 0.9878331

00:38:37.484 --> 00:38:38.765 is crucial for love and
NOTE Confidence: 0.9878331

00:38:38.765 --> 00:38:39.724 friendship. You need to be
NOTE Confidence: 0.9878331

00:38:39.724 --> 00:38:41.085 able to recognize your friend
NOTE Confidence: 0.9878331

00:38:41.085 --> 00:38:42.285 or your lover and tell
NOTE Confidence: 0.9878331

00:38:42.285 --> 00:38:43.244 them from day to day,
NOTE Confidence: 0.9878331

00:38:43.484 --> 00:38:44.844 in order to manifest those
NOTE Confidence: 0.9878331

00:38:44.844 --> 00:38:46.410 properties. Friendship is, of course,
NOTE Confidence: 0.9878331

00:38:46.410 --> 00:38:48.329 important for networks, and networks
NOTE Confidence: 0.9878331

00:38:48.329 --> 00:38:49.550 are important for cooperation.
NOTE Confidence: 0.9675841

00:38:50.810 --> 00:38:52.089 And all of these things
NOTE Confidence: 0.9675841

00:38:52.089 --> 00:38:52.969 are, you know, these other
NOTE Confidence: 0.9675841

00:38:52.969 --> 00:38:54.170 things in group preferences and

NOTE Confidence: 0.9675841

00:38:54.170 --> 00:38:55.369 model hierarchy are in turn

NOTE Confidence: 0.9675841

00:38:55.369 --> 00:38:56.810 important for other ones that

NOTE Confidence: 0.9675841

00:38:56.810 --> 00:38:58.349 are, on this list.

NOTE Confidence: 0.9763291

00:38:59.125 --> 00:39:00.085 I can't speak about all

NOTE Confidence: 0.9763291

00:39:00.085 --> 00:39:00.805 of them, but I would

NOTE Confidence: 0.9763291

00:39:00.805 --> 00:39:01.605 like to say a few

NOTE Confidence: 0.9763291

00:39:01.605 --> 00:39:03.685 more words about teaching, then

NOTE Confidence: 0.9763291

00:39:03.685 --> 00:39:04.565 I'm gonna close with some

NOTE Confidence: 0.9763291

00:39:04.565 --> 00:39:06.245 remarks about artificial intelligence and

NOTE Confidence: 0.9763291

00:39:06.245 --> 00:39:07.605 then a final idea, and

NOTE Confidence: 0.9763291

00:39:07.605 --> 00:39:08.885 then we can, I guess,

NOTE Confidence: 0.9763291

00:39:08.885 --> 00:39:10.325 do our non University of

NOTE Confidence: 0.9763291

00:39:10.325 --> 00:39:11.864 Chicago style, questions?

NOTE Confidence: 0.98789555

00:39:13.140 --> 00:39:13.940 So I wanna say a

NOTE Confidence: 0.98789555

00:39:13.940 --> 00:39:15.219 few words about teaching, which

NOTE Confidence: 0.98789555

00:39:15.219 --> 00:39:16.099 lies at the root of
NOTE Confidence: 0.98789555

00:39:16.099 --> 00:39:17.560 our capacity for culture.
NOTE Confidence: 0.98822236

00:39:18.420 --> 00:39:20.099 Many animals learn. For example,
NOTE Confidence: 0.98822236

00:39:20.099 --> 00:39:21.000 a little fish,
NOTE Confidence: 0.98207986

00:39:22.020 --> 00:39:23.219 swimming in the sea can
NOTE Confidence: 0.98207986

00:39:23.219 --> 00:39:24.500 learn that if it swims
NOTE Confidence: 0.98207986

00:39:24.500 --> 00:39:25.300 up to the light, it
NOTE Confidence: 0.98207986

00:39:25.300 --> 00:39:27.105 will find food there. And
NOTE Confidence: 0.98207986

00:39:27.105 --> 00:39:28.625 that's called independent learning when
NOTE Confidence: 0.98207986

00:39:28.625 --> 00:39:29.825 an animal has contact with
NOTE Confidence: 0.98207986

00:39:29.825 --> 00:39:30.565 its environment.
NOTE Confidence: 0.97518164

00:39:31.185 --> 00:39:32.864 Now some animals also learn
NOTE Confidence: 0.97518164

00:39:32.864 --> 00:39:34.305 socially. So, you know, you
NOTE Confidence: 0.97518164

00:39:34.305 --> 00:39:35.105 put your hand in the
NOTE Confidence: 0.97518164

00:39:35.105 --> 00:39:35.985 fire and you learn that
NOTE Confidence: 0.97518164

00:39:35.985 --> 00:39:36.645 it burns,

NOTE Confidence: 0.97115797

00:39:37.344 --> 00:39:38.465 or I watch you put

NOTE Confidence: 0.97115797

00:39:38.465 --> 00:39:39.185 your hand in the fire

NOTE Confidence: 0.97115797

00:39:39.185 --> 00:39:40.065 and I learn that it

NOTE Confidence: 0.97115797

00:39:40.065 --> 00:39:42.200 burns. Now that's very efficient.

NOTE Confidence: 0.97115797

00:39:42.260 --> 00:39:43.620 Right? Because I gain almost

NOTE Confidence: 0.97115797

00:39:43.620 --> 00:39:44.820 as much knowledge that fire

NOTE Confidence: 0.97115797

00:39:44.820 --> 00:39:45.700 burns, but I pay none

NOTE Confidence: 0.97115797

00:39:45.700 --> 00:39:46.580 of the price. My hand

NOTE Confidence: 0.97115797

00:39:46.580 --> 00:39:48.020 isn't burned. So social learning

NOTE Confidence: 0.97115797

00:39:48.020 --> 00:39:49.239 is incredibly efficient.

NOTE Confidence: 0.976317

00:39:49.540 --> 00:39:50.900 And that's less much less

NOTE Confidence: 0.976317

00:39:50.900 --> 00:39:52.260 common than independent learning, but

NOTE Confidence: 0.976317

00:39:52.260 --> 00:39:53.300 still exists in the animal

NOTE Confidence: 0.976317

00:39:53.300 --> 00:39:54.654 kingdom. But we do something

NOTE Confidence: 0.976317

00:39:54.654 --> 00:39:55.934 even more amazing than that

NOTE Confidence: 0.976317

00:39:55.934 --> 00:39:56.974 is as we teach each
NOTE Confidence: 0.976317

00:39:56.974 --> 00:39:58.575 other things. We affirmatively set
NOTE Confidence: 0.976317

00:39:58.575 --> 00:40:00.094 out to teach each other
NOTE Confidence: 0.976317

00:40:00.094 --> 00:40:01.234 stuff, not just passively
NOTE Confidence: 0.9996507

00:40:01.535 --> 00:40:02.035 mimicking
NOTE Confidence: 0.9758516

00:40:02.335 --> 00:40:02.994 each other.
NOTE Confidence: 0.98427504

00:40:03.694 --> 00:40:05.535 And this is extremely rare
NOTE Confidence: 0.98427504

00:40:05.535 --> 00:40:06.960 in the animal kingdom. The
NOTE Confidence: 0.98427504

00:40:06.960 --> 00:40:08.800 teaching of explicit teaching by
NOTE Confidence: 0.98427504

00:40:08.800 --> 00:40:10.739 one animal of another animal
NOTE Confidence: 0.98427504

00:40:10.800 --> 00:40:11.940 how to do something
NOTE Confidence: 0.9622374

00:40:12.239 --> 00:40:13.359 is is seen in our
NOTE Confidence: 0.9622374

00:40:13.359 --> 00:40:15.119 species, but it's very rare
NOTE Confidence: 0.9622374

00:40:15.119 --> 00:40:16.719 in, in elsewhere in the
NOTE Confidence: 0.9622374

00:40:16.719 --> 00:40:17.460 animal kingdom.
NOTE Confidence: 0.9990209

00:40:17.920 --> 00:40:19.520 But this ability allows us

NOTE Confidence: 0.9990209
00:40:19.520 --> 00:40:20.180 to cumulatively
NOTE Confidence: 0.98039234
00:40:20.560 --> 00:40:22.614 create and store knowledge and
NOTE Confidence: 0.98039234
00:40:22.614 --> 00:40:24.375 transmit it across time and
NOTE Confidence: 0.98039234
00:40:24.375 --> 00:40:25.895 place. It allows us to
NOTE Confidence: 0.98039234
00:40:25.895 --> 00:40:27.175 be a cultural animals, in
NOTE Confidence: 0.98039234
00:40:27.175 --> 00:40:28.695 other words. And the knowledge
NOTE Confidence: 0.98039234
00:40:28.695 --> 00:40:30.055 that we transmit across time
NOTE Confidence: 0.98039234
00:40:30.055 --> 00:40:31.975 and space by teaching is
NOTE Confidence: 0.98039234
00:40:31.975 --> 00:40:33.275 a fundamental driver,
NOTE Confidence: 0.9808998
00:40:33.895 --> 00:40:35.495 of economic growth. So one
NOTE Confidence: 0.9808998
00:40:35.495 --> 00:40:36.295 of the things I like
NOTE Confidence: 0.9808998
00:40:36.295 --> 00:40:37.495 to talk about when I
NOTE Confidence: 0.9808998
00:40:37.575 --> 00:40:38.480 when my kids were still
NOTE Confidence: 0.9808998
00:40:38.480 --> 00:40:39.280 young is I was like,
NOTE Confidence: 0.9808998
00:40:39.280 --> 00:40:40.800 isn't it amazing that when
NOTE Confidence: 0.9808998

00:40:40.800 --> 00:40:42.319 you were born, calculus had
NOTE Confidence: 0.9808998

00:40:42.319 --> 00:40:43.599 already been invented and you
NOTE Confidence: 0.9808998

00:40:43.599 --> 00:40:44.400 can learn it in high
NOTE Confidence: 0.9808998

00:40:44.400 --> 00:40:44.900 school?
NOTE Confidence: 0.9671783

00:40:45.520 --> 00:40:46.800 You know, that's a miracle.
NOTE Confidence: 0.9671783

00:40:46.800 --> 00:40:47.760 Right? You you didn't have
NOTE Confidence: 0.9671783

00:40:47.760 --> 00:40:48.819 to pay for the calculus.
NOTE Confidence: 0.9671783

00:40:49.040 --> 00:40:50.160 Newton had already and Leibnitz
NOTE Confidence: 0.9671783

00:40:50.160 --> 00:40:51.119 had already invented it. It
NOTE Confidence: 0.9671783

00:40:51.119 --> 00:40:51.920 was just there. And all
NOTE Confidence: 0.9671783

00:40:51.920 --> 00:40:52.800 of us were born into
NOTE Confidence: 0.9671783

00:40:52.800 --> 00:40:53.685 a world where all the
NOTE Confidence: 0.9671783

00:40:53.685 --> 00:40:54.825 animals had been domesticated,
NOTE Confidence: 0.9847056

00:40:55.445 --> 00:40:56.965 and metallurgy had been figured
NOTE Confidence: 0.9847056

00:40:56.965 --> 00:40:58.325 out how to forge iron,
NOTE Confidence: 0.9847056

00:40:58.325 --> 00:40:59.364 and the roads had been

NOTE Confidence: 0.9847056

00:40:59.364 --> 00:41:00.725 built, and the cities had

NOTE Confidence: 0.9847056

00:41:00.725 --> 00:41:01.844 been mapped. Here here's a

NOTE Confidence: 0.9847056

00:41:01.844 --> 00:41:02.645 map of the city. You

NOTE Confidence: 0.9847056

00:41:02.645 --> 00:41:03.364 didn't have to pay a

NOTE Confidence: 0.9847056

00:41:03.364 --> 00:41:04.405 damn thing for it. Someone

NOTE Confidence: 0.9847056

00:41:04.405 --> 00:41:05.285 else figured out how to

NOTE Confidence: 0.9847056

00:41:05.285 --> 00:41:06.579 map the city, and calculus

NOTE Confidence: 0.9847056

00:41:06.579 --> 00:41:07.780 had been invented, and the

NOTE Confidence: 0.9847056

00:41:07.780 --> 00:41:09.140 Iliad had been written. And

NOTE Confidence: 0.9847056

00:41:09.140 --> 00:41:10.020 you can read it and

NOTE Confidence: 0.9847056

00:41:10.020 --> 00:41:11.619 weep still two thousand years

NOTE Confidence: 0.9847056

00:41:11.619 --> 00:41:13.140 later, you know, when when

NOTE Confidence: 0.9847056

00:41:13.140 --> 00:41:15.540 Andromache mourns Hector's departure for

NOTE Confidence: 0.9847056

00:41:15.540 --> 00:41:17.380 battle. So, you know, all

NOTE Confidence: 0.9847056

00:41:17.380 --> 00:41:18.739 of these amazing things were

NOTE Confidence: 0.9847056

00:41:18.739 --> 00:41:20.500 just given to you as
NOTE Confidence: 0.9847056

00:41:20.500 --> 00:41:21.560 a fund of knowledge,
NOTE Confidence: 0.9998446

00:41:21.905 --> 00:41:23.445 and it makes you enormously
NOTE Confidence: 0.9998446

00:41:23.665 --> 00:41:24.165 wealthy
NOTE Confidence: 0.96769696

00:41:24.785 --> 00:41:26.065 and capable of doing thing
NOTE Confidence: 0.96769696

00:41:26.145 --> 00:41:27.344 more things in a day
NOTE Confidence: 0.96769696

00:41:27.344 --> 00:41:28.065 than you could have done
NOTE Confidence: 0.96769696

00:41:28.065 --> 00:41:28.864 if you've been born a
NOTE Confidence: 0.96769696

00:41:28.864 --> 00:41:30.065 hundred or a thousand or
NOTE Confidence: 0.96769696

00:41:30.065 --> 00:41:31.505 two thousand years ago because
NOTE Confidence: 0.96769696

00:41:31.505 --> 00:41:33.025 of this capital, this this
NOTE Confidence: 0.96769696

00:41:33.025 --> 00:41:34.785 fundamental fund of knowledge, which
NOTE Confidence: 0.96769696

00:41:34.785 --> 00:41:36.065 you got for free on
NOTE Confidence: 0.96769696

00:41:36.065 --> 00:41:37.525 the day you were born.
NOTE Confidence: 0.9851321

00:41:38.600 --> 00:41:39.640 But this and and that
NOTE Confidence: 0.9851321

00:41:39.640 --> 00:41:40.360 is, in fact, one of

NOTE Confidence: 0.9851321

00:41:40.360 --> 00:41:41.320 the arguments about one of

NOTE Confidence: 0.9851321

00:41:41.320 --> 00:41:43.000 the fundamental drivers of economic

NOTE Confidence: 0.9851321

00:41:43.000 --> 00:41:45.080 growth is cumulative culture, actually.

NOTE Confidence: 0.9851321

00:41:45.080 --> 00:41:46.600 Why do economies keep growing?

NOTE Confidence: 0.9851321

00:41:46.600 --> 00:41:48.040 Well, it's because knowledge keeps

NOTE Confidence: 0.9851321

00:41:48.040 --> 00:41:48.540 growing,

NOTE Confidence: 0.99452287

00:41:48.840 --> 00:41:49.580 is the argument.

NOTE Confidence: 0.9906845

00:41:50.225 --> 00:41:51.265 But it turns out that

NOTE Confidence: 0.9906845

00:41:51.265 --> 00:41:53.265 this capacity for culture shapes

NOTE Confidence: 0.9906845

00:41:53.265 --> 00:41:55.105 us even more. Our genes

NOTE Confidence: 0.9906845

00:41:55.105 --> 00:41:56.805 affect our capacity for culture,

NOTE Confidence: 0.9906845

00:41:56.864 --> 00:41:58.705 and our culture affects our

NOTE Confidence: 0.9906845

00:41:58.705 --> 00:41:59.205 genes.

NOTE Confidence: 0.96196824

00:41:59.905 --> 00:42:01.185 And the best example so

NOTE Confidence: 0.96196824

00:42:01.185 --> 00:42:03.185 far of how macro historical

NOTE Confidence: 0.96196824

00:42:03.185 --> 00:42:03.685 developments
NOTE Confidence: 0.9997987

00:42:04.145 --> 00:42:05.364 could affect our genes
NOTE Confidence: 0.99970955

00:42:05.680 --> 00:42:07.140 is the evolution of lactose
NOTE Confidence: 0.99970955

00:42:07.200 --> 00:42:08.500 tolerance in adults.
NOTE Confidence: 0.99833894

00:42:09.360 --> 00:42:10.880 Now prior to about ten
NOTE Confidence: 0.99833894

00:42:10.880 --> 00:42:11.940 thousand years ago,
NOTE Confidence: 0.9591202

00:42:12.800 --> 00:42:14.400 all human beings, they made
NOTE Confidence: 0.9591202

00:42:14.400 --> 00:42:15.920 lactase, the enzyme that digest
NOTE Confidence: 0.9591202

00:42:15.920 --> 00:42:17.120 the sugar in in milk,
NOTE Confidence: 0.9591202

00:42:17.120 --> 00:42:18.020 which is lactose.
NOTE Confidence: 0.99595124

00:42:18.320 --> 00:42:19.360 They made lactase in our
NOTE Confidence: 0.99595124

00:42:19.360 --> 00:42:20.535 stomach so that when we
NOTE Confidence: 0.99595124

00:42:20.535 --> 00:42:21.734 were infants and we were
NOTE Confidence: 0.99595124

00:42:21.734 --> 00:42:23.355 suckling at our mother's breast,
NOTE Confidence: 0.99595124

00:42:23.415 --> 00:42:24.614 we could digest the milk
NOTE Confidence: 0.99595124

00:42:24.614 --> 00:42:25.435 that we drank.

NOTE Confidence: 0.94858754
00:42:25.974 --> 00:42:27.335 But then right around the
NOTE Confidence: 0.94858754
00:42:27.335 --> 00:42:28.375 time we would be weaned
NOTE Confidence: 0.94858754
00:42:28.375 --> 00:42:29.655 around two or three, our
NOTE Confidence: 0.94858754
00:42:29.655 --> 00:42:31.194 body stopped producing lactase.
NOTE Confidence: 0.98689103
00:42:32.150 --> 00:42:33.350 Why? Well, because we never
NOTE Confidence: 0.98689103
00:42:33.350 --> 00:42:34.390 drank milk again for the
NOTE Confidence: 0.98689103
00:42:34.390 --> 00:42:35.110 rest of our lives, and
NOTE Confidence: 0.98689103
00:42:35.110 --> 00:42:36.230 it would be pointless and
NOTE Confidence: 0.98689103
00:42:36.230 --> 00:42:37.290 inefficient biologically
NOTE Confidence: 0.99823767
00:42:37.590 --> 00:42:38.550 for us to continue to
NOTE Confidence: 0.99823767
00:42:38.550 --> 00:42:39.670 make a useless enzyme for
NOTE Confidence: 0.99823767
00:42:39.670 --> 00:42:40.550 the rest of our lives.
NOTE Confidence: 0.99823767
00:42:40.550 --> 00:42:41.670 We only needed the enzyme
NOTE Confidence: 0.99823767
00:42:41.670 --> 00:42:42.950 while we were breastfeeding. After
NOTE Confidence: 0.99823767
00:42:42.950 --> 00:42:43.989 that, we never needed it
NOTE Confidence: 0.99823767

00:42:43.989 --> 00:42:44.489 again.

NOTE Confidence: 0.9573535

00:42:45.195 --> 00:42:47.035 Then what happened? Multiple times

NOTE Confidence: 0.9573535

00:42:47.035 --> 00:42:48.235 between three and eight thousand

NOTE Confidence: 0.9573535

00:42:48.235 --> 00:42:49.515 or nine thousand years ago,

NOTE Confidence: 0.9573535

00:42:49.515 --> 00:42:51.755 human beings domesticated milk producing

NOTE Confidence: 0.9573535

00:42:51.755 --> 00:42:53.515 animals, camels and goats and

NOTE Confidence: 0.9573535

00:42:53.515 --> 00:42:54.715 sheeps and cows and so

NOTE Confidence: 0.9573535

00:42:54.715 --> 00:42:56.395 on, for example. And by

NOTE Confidence: 0.9573535

00:42:56.395 --> 00:42:57.614 that cultural innovation,

NOTE Confidence: 0.9869345

00:42:58.219 --> 00:42:59.739 the domestication of those animals,

NOTE Confidence: 0.9869345

00:42:59.739 --> 00:43:00.700 the creation of all the

NOTE Confidence: 0.9869345

00:43:00.700 --> 00:43:01.660 knowledge and how to care

NOTE Confidence: 0.9869345

00:43:01.660 --> 00:43:03.019 for those animals, all of

NOTE Confidence: 0.9869345

00:43:03.019 --> 00:43:04.480 that stuff, all that culture

NOTE Confidence: 0.9869345

00:43:04.539 --> 00:43:05.760 that we had to invent,

NOTE Confidence: 0.9869345

00:43:06.059 --> 00:43:07.339 what did we do? We

NOTE Confidence: 0.9869345

00:43:07.339 --> 00:43:08.559 changed our environment.

NOTE Confidence: 0.9741812

00:43:09.099 --> 00:43:10.619 With our culture, with our

NOTE Confidence: 0.9741812

00:43:10.619 --> 00:43:12.559 agency, we changed our environment.

NOTE Confidence: 0.9741812

00:43:12.665 --> 00:43:14.425 And now the environment had

NOTE Confidence: 0.9741812

00:43:14.425 --> 00:43:15.244 milk in it.

NOTE Confidence: 0.9908878

00:43:15.625 --> 00:43:17.305 So those humans among us

NOTE Confidence: 0.9908878

00:43:17.305 --> 00:43:18.125 who mutated

NOTE Confidence: 0.9973719

00:43:18.425 --> 00:43:20.185 to have lactase persistence into

NOTE Confidence: 0.9973719

00:43:20.185 --> 00:43:20.685 adulthood

NOTE Confidence: 0.9484499

00:43:21.065 --> 00:43:22.905 could out compete, out survive

NOTE Confidence: 0.9484499

00:43:22.905 --> 00:43:23.864 the humans that didn't have

NOTE Confidence: 0.9484499

00:43:23.864 --> 00:43:24.605 that mutation.

NOTE Confidence: 0.9710338

00:43:25.119 --> 00:43:26.480 Because now we those humans

NOTE Confidence: 0.9710338

00:43:26.480 --> 00:43:28.000 that had lactase persistence had

NOTE Confidence: 0.9710338

00:43:28.000 --> 00:43:29.359 another source of food as

NOTE Confidence: 0.9710338

00:43:29.359 --> 00:43:30.880 adults and a source of
NOTE Confidence: 0.9710338

00:43:30.880 --> 00:43:31.700 clean hydration
NOTE Confidence: 0.99104804

00:43:32.000 --> 00:43:33.300 if the water was spoiled.
NOTE Confidence: 0.981074

00:43:34.080 --> 00:43:35.119 So the argue and and
NOTE Confidence: 0.981074

00:43:35.119 --> 00:43:36.239 that's why and that and
NOTE Confidence: 0.981074

00:43:36.239 --> 00:43:37.839 that is why the genetic
NOTE Confidence: 0.981074

00:43:37.839 --> 00:43:39.200 distribution of lactase in the
NOTE Confidence: 0.981074

00:43:39.200 --> 00:43:40.914 world today is completely different
NOTE Confidence: 0.981074

00:43:40.914 --> 00:43:41.954 than it would have been
NOTE Confidence: 0.981074

00:43:41.954 --> 00:43:43.395 had we culturally not made
NOTE Confidence: 0.981074

00:43:43.395 --> 00:43:44.934 those innovations that we made.
NOTE Confidence: 0.981074

00:43:44.994 --> 00:43:46.035 So this is an example
NOTE Confidence: 0.981074

00:43:46.035 --> 00:43:47.655 of culture over macrohistorical
NOTE Confidence: 0.9909128

00:43:48.035 --> 00:43:49.635 time reshaping the course of
NOTE Confidence: 0.9909128

00:43:49.635 --> 00:43:50.454 human evolution.
NOTE Confidence: 0.97343266

00:43:50.914 --> 00:43:52.355 Actually, I believe, and many

NOTE Confidence: 0.97343266

00:43:52.355 --> 00:43:53.969 other scientists believe, that these

NOTE Confidence: 0.97343266

00:43:53.969 --> 00:43:55.410 sorts of forces are operating

NOTE Confidence: 0.97343266

00:43:55.410 --> 00:43:56.869 on even shorter time scales.

NOTE Confidence: 0.97343266

00:43:56.930 --> 00:43:58.130 I think we're all becoming

NOTE Confidence: 0.97343266

00:43:58.130 --> 00:43:59.650 more myopic in part because

NOTE Confidence: 0.97343266

00:43:59.650 --> 00:44:00.950 of medieval lens grinders.

NOTE Confidence: 0.98569983

00:44:01.330 --> 00:44:02.290 So I would have been

NOTE Confidence: 0.98569983

00:44:02.290 --> 00:44:03.570 dead ten thousand years ago.

NOTE Confidence: 0.98569983

00:44:03.570 --> 00:44:04.450 The lion would have eaten

NOTE Confidence: 0.98569983

00:44:04.450 --> 00:44:05.489 me. I wouldn't have seen

NOTE Confidence: 0.98569983

00:44:05.489 --> 00:44:07.425 it coming. Okay? Or if

NOTE Confidence: 0.98569983

00:44:07.425 --> 00:44:08.805 you think about modern medicine,

NOTE Confidence: 0.98569983

00:44:08.945 --> 00:44:09.905 and I'm I'm not saying

NOTE Confidence: 0.98569983

00:44:09.905 --> 00:44:11.425 this pejoratively or in any

NOTE Confidence: 0.98569983

00:44:11.425 --> 00:44:12.465 way to suggest we shouldn't

NOTE Confidence: 0.98569983

00:44:12.465 --> 00:44:13.505 invent modern medicine. Please don't
NOTE Confidence: 0.98569983

00:44:13.505 --> 00:44:14.705 misunderstand what I'm saying right
NOTE Confidence: 0.98569983

00:44:14.705 --> 00:44:16.305 now. But with modern medicine,
NOTE Confidence: 0.98569983

00:44:16.305 --> 00:44:17.425 we are saving many lives
NOTE Confidence: 0.98569983

00:44:17.425 --> 00:44:18.690 that otherwise would have died.
NOTE Confidence: 0.98569983

00:44:18.770 --> 00:44:19.969 So the gene pool is
NOTE Confidence: 0.98569983

00:44:19.969 --> 00:44:20.469 changing,
NOTE Confidence: 0.9809418

00:44:20.849 --> 00:44:22.050 not over the last hundred
NOTE Confidence: 0.9809418

00:44:22.050 --> 00:44:23.329 or two hundred years, but
NOTE Confidence: 0.9809418

00:44:23.329 --> 00:44:24.210 the kinds of humans that
NOTE Confidence: 0.9809418

00:44:24.210 --> 00:44:25.170 are alive a thousand or
NOTE Confidence: 0.9809418

00:44:25.170 --> 00:44:26.369 five thousand years from now
NOTE Confidence: 0.9809418

00:44:26.369 --> 00:44:27.569 will be completely different than
NOTE Confidence: 0.9809418

00:44:27.569 --> 00:44:28.710 that would have been alive
NOTE Confidence: 0.9809418

00:44:28.849 --> 00:44:30.369 had we not invented this
NOTE Confidence: 0.9809418

00:44:30.369 --> 00:44:32.875 extraordinary powerful thing culturally that

NOTE Confidence: 0.9809418

00:44:32.875 --> 00:44:34.395 we've invented, which is which

NOTE Confidence: 0.9809418

00:44:34.395 --> 00:44:35.375 is modern medicine.

NOTE Confidence: 0.82948923

00:44:36.395 --> 00:44:38.415 There are actually Kevin Lalanne

NOTE Confidence: 0.82948923

00:44:38.475 --> 00:44:40.075 Kevin Lalanne has written a

NOTE Confidence: 0.82948923

00:44:40.075 --> 00:44:41.275 wonderful review, and this is

NOTE Confidence: 0.82948923

00:44:41.275 --> 00:44:42.415 all cited in the book,

NOTE Confidence: 0.9543639

00:44:42.715 --> 00:44:44.155 of many different cultural things

NOTE Confidence: 0.9543639

00:44:44.155 --> 00:44:45.770 like languages, how languages. For

NOTE Confidence: 0.9543639

00:44:45.770 --> 00:44:46.650 example, there's a set of

NOTE Confidence: 0.9543639

00:44:46.650 --> 00:44:48.570 arguments about how tonal languages

NOTE Confidence: 0.9543639

00:44:48.570 --> 00:44:49.950 in many Asian societies,

NOTE Confidence: 0.95294845

00:44:50.330 --> 00:44:51.070 how actually,

NOTE Confidence: 0.9589067

00:44:51.609 --> 00:44:52.890 the the there's a different

NOTE Confidence: 0.9589067

00:44:52.890 --> 00:44:54.489 distribution of genes related to

NOTE Confidence: 0.9589067

00:44:54.489 --> 00:44:54.989 hearing

NOTE Confidence: 0.99844414

00:44:55.290 --> 00:44:56.730 in in people who grow
NOTE Confidence: 0.99844414

00:44:56.730 --> 00:44:57.550 up in societies
NOTE Confidence: 0.9850281

00:44:58.010 --> 00:44:59.530 where actually telling the difference
NOTE Confidence: 0.9850281

00:44:59.530 --> 00:45:01.145 between tones is very important
NOTE Confidence: 0.9850281

00:45:01.145 --> 00:45:02.185 and has been for thousands
NOTE Confidence: 0.9850281

00:45:02.185 --> 00:45:02.765 of years.
NOTE Confidence: 0.9994308

00:45:03.145 --> 00:45:05.244 Many examples like this. So
NOTE Confidence: 0.962032

00:45:05.945 --> 00:45:06.425 so,
NOTE Confidence: 0.95696723

00:45:07.145 --> 00:45:08.744 so, so our genes and
NOTE Confidence: 0.95696723

00:45:08.744 --> 00:45:10.125 our culture in a sense
NOTE Confidence: 0.95696723

00:45:10.185 --> 00:45:11.244 are in a conversation.
NOTE Confidence: 0.9881303

00:45:11.545 --> 00:45:12.344 And as I said, there
NOTE Confidence: 0.9881303

00:45:12.344 --> 00:45:13.785 are many other amazing examples
NOTE Confidence: 0.9881303

00:45:13.785 --> 00:45:15.020 of this. Now there are
NOTE Confidence: 0.9881303

00:45:15.020 --> 00:45:16.260 a number of applications of
NOTE Confidence: 0.9881303

00:45:16.260 --> 00:45:17.239 all of these ideas

NOTE Confidence: 0.99657834

00:45:17.620 --> 00:45:18.920 about how we have evolved,

NOTE Confidence: 0.93645674

00:45:19.380 --> 00:45:20.600 to make societies,

NOTE Confidence: 0.9971195

00:45:20.980 --> 00:45:22.180 and I'd like to briefly

NOTE Confidence: 0.9971195

00:45:22.180 --> 00:45:22.980 focus on,

NOTE Confidence: 0.9963781

00:45:23.380 --> 00:45:24.280 on one illustration

NOTE Confidence: 0.972651

00:45:24.580 --> 00:45:25.880 before I close.

NOTE Confidence: 0.9650801

00:45:26.420 --> 00:45:28.214 Because, for instance, we humans

NOTE Confidence: 0.9650801

00:45:28.214 --> 00:45:29.575 have begun to modify our

NOTE Confidence: 0.9650801

00:45:29.575 --> 00:45:30.474 social systems

NOTE Confidence: 0.932663

00:45:30.855 --> 00:45:32.075 with artificial intelligence,

NOTE Confidence: 0.99803096

00:45:32.614 --> 00:45:33.594 and we increasingly

NOTE Confidence: 0.99965507

00:45:34.055 --> 00:45:35.275 are adding machines

NOTE Confidence: 0.942407

00:45:35.575 --> 00:45:37.255 such as driverless cars or

NOTE Confidence: 0.942407

00:45:37.255 --> 00:45:39.434 automated checkout clerks or warehouse

NOTE Confidence: 0.942407

00:45:39.575 --> 00:45:41.734 robots or digital assistants and

NOTE Confidence: 0.942407

00:45:41.734 --> 00:45:43.619 autonomous agents such as online

NOTE Confidence: 0.942407

00:45:43.619 --> 00:45:45.559 bots to our social systems.

NOTE Confidence: 0.9571009

00:45:46.020 --> 00:45:47.700 And these machines will act

NOTE Confidence: 0.9571009

00:45:47.700 --> 00:45:49.380 in human like ways on

NOTE Confidence: 0.9571009

00:45:49.380 --> 00:45:50.900 a level playing field as

NOTE Confidence: 0.9571009

00:45:50.900 --> 00:45:52.180 if they were human and

NOTE Confidence: 0.9571009

00:45:52.180 --> 00:45:54.119 what I call hybrid systems.

NOTE Confidence: 0.9991102

00:45:54.819 --> 00:45:56.180 And these hybrid systems of

NOTE Confidence: 0.9991102

00:45:56.180 --> 00:45:57.079 humans and machines

NOTE Confidence: 0.9983009

00:45:57.380 --> 00:45:58.119 offer opportunities

NOTE Confidence: 0.9997564

00:45:58.515 --> 00:45:59.795 for a new kind of

NOTE Confidence: 0.9997564

00:45:59.795 --> 00:46:01.414 social artificial intelligence

NOTE Confidence: 0.96197796

00:46:02.035 --> 00:46:03.474 because the AI might act

NOTE Confidence: 0.96197796

00:46:03.474 --> 00:46:03.974 socially

NOTE Confidence: 0.9960383

00:46:04.275 --> 00:46:06.055 or might also actually affect

NOTE Confidence: 0.9960383

00:46:06.275 --> 00:46:07.414 our social organization.

NOTE Confidence: 0.99963367
00:46:07.954 --> 00:46:08.914 So one of my toy
NOTE Confidence: 0.99963367
00:46:08.914 --> 00:46:09.974 examples of this
NOTE Confidence: 0.9671312
00:46:10.355 --> 00:46:12.355 is imagine a digital assistant
NOTE Confidence: 0.9671312
00:46:12.355 --> 00:46:13.174 like an Alexa.
NOTE Confidence: 0.99667394
00:46:14.070 --> 00:46:15.770 The manufacturer of an Alexa,
NOTE Confidence: 0.98561037
00:46:16.550 --> 00:46:18.310 is very interested in optimizing
NOTE Confidence: 0.98561037
00:46:18.310 --> 00:46:19.830 the human machine interaction. So
NOTE Confidence: 0.98561037
00:46:19.830 --> 00:46:21.110 they make that product so
NOTE Confidence: 0.98561037
00:46:21.110 --> 00:46:22.550 that you like it. You
NOTE Confidence: 0.98561037
00:46:22.550 --> 00:46:23.930 would never buy an Alexa
NOTE Confidence: 0.98561037
00:46:23.989 --> 00:46:24.870 if every time you had
NOTE Confidence: 0.98561037
00:46:24.870 --> 00:46:25.830 to speak to it, you
NOTE Confidence: 0.98561037
00:46:25.830 --> 00:46:26.650 had to say,
NOTE Confidence: 0.9946277
00:46:27.435 --> 00:46:29.195 excuse me, Alexa. I'm very
NOTE Confidence: 0.9946277
00:46:29.195 --> 00:46:30.315 sorry to interrupt you.
NOTE Confidence: 0.9919376

00:46:30.715 --> 00:46:31.775 If you don't mind,
NOTE Confidence: 0.9760039

00:46:32.075 --> 00:46:33.035 would you please tell me
NOTE Confidence: 0.9760039

00:46:33.035 --> 00:46:34.555 the weather tomorrow? This level
NOTE Confidence: 0.9760039

00:46:34.555 --> 00:46:35.995 of obsequiousness would drive you
NOTE Confidence: 0.9760039

00:46:35.995 --> 00:46:37.114 nuts. You would never buy
NOTE Confidence: 0.9760039

00:46:37.114 --> 00:46:37.915 that kind of a machine.
NOTE Confidence: 0.9760039

00:46:37.915 --> 00:46:38.755 You expect to be able
NOTE Confidence: 0.9760039

00:46:38.755 --> 00:46:40.315 to say, Alexa, weather, and
NOTE Confidence: 0.9760039

00:46:40.315 --> 00:46:42.010 the machine responds. And that's
NOTE Confidence: 0.9760039

00:46:42.010 --> 00:46:43.370 fine until you bring that
NOTE Confidence: 0.9760039

00:46:43.370 --> 00:46:44.650 machine into your house and
NOTE Confidence: 0.9760039

00:46:44.650 --> 00:46:45.690 your children, in speaking to
NOTE Confidence: 0.9760039

00:46:45.690 --> 00:46:46.650 that machine, learn to be
NOTE Confidence: 0.9760039

00:46:46.650 --> 00:46:47.150 rude.
NOTE Confidence: 0.98194736

00:46:47.450 --> 00:46:48.170 And then they go to
NOTE Confidence: 0.98194736

00:46:48.170 --> 00:46:49.130 the playground, and they are

NOTE Confidence: 0.98194736

00:46:49.130 --> 00:46:50.350 rude to other children.

NOTE Confidence: 0.97854865

00:46:50.890 --> 00:46:52.170 So the introduction of these

NOTE Confidence: 0.97854865

00:46:52.170 --> 00:46:54.030 machines into our social systems

NOTE Confidence: 0.97854865

00:46:54.250 --> 00:46:55.610 changes how we treat each

NOTE Confidence: 0.97854865

00:46:55.610 --> 00:46:56.925 other. So what my lab

NOTE Confidence: 0.97854865

00:46:56.925 --> 00:46:57.725 has been studying for the

NOTE Confidence: 0.97854865

00:46:57.725 --> 00:46:58.765 last ten years, in addition,

NOTE Confidence: 0.97854865

00:46:58.765 --> 00:46:59.905 other stuff that we study

NOTE Confidence: 0.97854865

00:46:59.965 --> 00:47:01.325 is this, is how the

NOTE Confidence: 0.97854865

00:47:01.325 --> 00:47:03.005 introduction of forms of artificial

NOTE Confidence: 0.97854865

00:47:03.005 --> 00:47:03.505 intelligence

NOTE Confidence: 0.99926454

00:47:03.885 --> 00:47:05.025 into social systems

NOTE Confidence: 0.99761444

00:47:05.325 --> 00:47:06.844 changes the capacity of human

NOTE Confidence: 0.99761444

00:47:06.844 --> 00:47:08.685 groups to solve collective action

NOTE Confidence: 0.99761444

00:47:08.685 --> 00:47:09.185 problems.

NOTE Confidence: 0.9925525

00:47:09.530 --> 00:47:10.969 Do we lose our moral
NOTE Confidence: 0.9925525

00:47:10.969 --> 00:47:12.810 agency, for example, when we
NOTE Confidence: 0.9925525

00:47:12.810 --> 00:47:14.329 add these AI systems? If
NOTE Confidence: 0.9925525

00:47:14.329 --> 00:47:15.550 people increasingly can
NOTE Confidence: 0.96493655

00:47:16.730 --> 00:47:18.250 rely on AI agents to
NOTE Confidence: 0.96493655

00:47:18.250 --> 00:47:19.770 help them make decisions, does
NOTE Confidence: 0.96493655

00:47:19.770 --> 00:47:21.290 the natural morality that we
NOTE Confidence: 0.96493655

00:47:21.290 --> 00:47:22.349 evolved to have
NOTE Confidence: 0.99796426

00:47:22.650 --> 00:47:24.170 decay and go away? Do
NOTE Confidence: 0.99796426

00:47:24.170 --> 00:47:25.230 we become more
NOTE Confidence: 0.9681762

00:47:25.645 --> 00:47:27.485 amoral, not just immoral in
NOTE Confidence: 0.9681762

00:47:27.485 --> 00:47:28.685 the presence of these machines,
NOTE Confidence: 0.9681762

00:47:28.685 --> 00:47:30.285 for example? Does our natural
NOTE Confidence: 0.9681762

00:47:30.285 --> 00:47:31.505 capacity for cooperation
NOTE Confidence: 0.9879334

00:47:32.205 --> 00:47:33.885 go away? Does our natural
NOTE Confidence: 0.9879334

00:47:33.885 --> 00:47:35.725 capacity for coordination to work

NOTE Confidence: 0.9879334

00:47:35.725 --> 00:47:37.325 together to solve problems? Can

NOTE Confidence: 0.9879334

00:47:37.325 --> 00:47:38.525 it be affected by the

NOTE Confidence: 0.9879334

00:47:38.525 --> 00:47:39.805 introduction of different kinds of

NOTE Confidence: 0.9879334

00:47:39.805 --> 00:47:41.219 programming into our midst? So

NOTE Confidence: 0.9879334

00:47:41.219 --> 00:47:42.180 we've done quite a few

NOTE Confidence: 0.9879334

00:47:42.180 --> 00:47:43.560 experiments with this.

NOTE Confidence: 0.9690123

00:47:43.940 --> 00:47:44.980 And what we've been doing

NOTE Confidence: 0.9690123

00:47:44.980 --> 00:47:45.859 in my lab because we're

NOTE Confidence: 0.9690123

00:47:45.859 --> 00:47:47.060 not a computer science lab,

NOTE Confidence: 0.9690123

00:47:47.060 --> 00:47:48.119 so we're not able

NOTE Confidence: 0.891446

00:47:48.420 --> 00:47:49.940 to invent super smart AI

NOTE Confidence: 0.891446

00:47:49.940 --> 00:47:51.060 like chat g p t

NOTE Confidence: 0.891446

00:47:51.060 --> 00:47:52.980 or alpha go or alpha

NOTE Confidence: 0.891446

00:47:52.980 --> 00:47:53.480 fold.

NOTE Confidence: 0.89941263

00:47:53.780 --> 00:47:54.739 What we do is is

NOTE Confidence: 0.89941263

00:47:54.739 --> 00:47:55.859 we're not trying to invent
NOTE Confidence: 0.89941263

00:47:55.859 --> 00:47:57.195 super smart AI to replace
NOTE Confidence: 0.89941263

00:47:57.195 --> 00:47:58.175 human interaction.
NOTE Confidence: 0.9839242

00:48:02.715 --> 00:48:03.915 We want simple forms of
NOTE Confidence: 0.9839242

00:48:03.915 --> 00:48:04.815 artificial intelligence,
NOTE Confidence: 0.96175426

00:48:05.195 --> 00:48:06.155 which because they have been
NOTE Confidence: 0.96175426

00:48:06.155 --> 00:48:07.275 added into the midst of
NOTE Confidence: 0.96175426

00:48:07.275 --> 00:48:08.175 smart humans,
NOTE Confidence: 0.9634926

00:48:08.635 --> 00:48:09.755 act like platinum in an
NOTE Confidence: 0.9634926

00:48:09.755 --> 00:48:11.275 organic chemistry reaction, like a
NOTE Confidence: 0.9634926

00:48:11.275 --> 00:48:11.775 catalyst,
NOTE Confidence: 0.9953221

00:48:12.190 --> 00:48:13.630 facilitating the ability of human
NOTE Confidence: 0.9953221

00:48:13.630 --> 00:48:15.250 groups to solve problems.
NOTE Confidence: 0.99766904

00:48:15.630 --> 00:48:16.510 So we just need a
NOTE Confidence: 0.99766904

00:48:16.510 --> 00:48:17.870 little bit of sprinkle of
NOTE Confidence: 0.99766904

00:48:17.870 --> 00:48:19.390 AI to make it easier

NOTE Confidence: 0.99766904
00:48:19.390 --> 00:48:20.690 for us to share information
NOTE Confidence: 0.97509795
00:48:20.989 --> 00:48:21.810 or reduce
NOTE Confidence: 0.81270057
00:48:22.190 --> 00:48:23.330 bias among ourselves
NOTE Confidence: 0.80102926
00:48:23.630 --> 00:48:24.770 or you'll cooperate,
NOTE Confidence: 0.9928529
00:48:25.230 --> 00:48:25.730 more.
NOTE Confidence: 0.9466367
00:48:26.105 --> 00:48:27.464 Can simple forms of AI
NOTE Confidence: 0.9466367
00:48:27.464 --> 00:48:28.585 when added to groups of
NOTE Confidence: 0.9466367
00:48:28.585 --> 00:48:30.265 much smarter humans help the
NOTE Confidence: 0.9466367
00:48:30.265 --> 00:48:31.484 humans to help themselves?
NOTE Confidence: 0.99233884
00:48:31.785 --> 00:48:33.065 And we think so. Let
NOTE Confidence: 0.99233884
00:48:33.065 --> 00:48:34.204 me show you two experiments
NOTE Confidence: 0.99233884
00:48:34.265 --> 00:48:35.724 we've done, with this.
NOTE Confidence: 0.95360684
00:48:36.505 --> 00:48:38.664 This experiment involved simple AI
NOTE Confidence: 0.95360684
00:48:38.664 --> 00:48:39.484 that we deployed
NOTE Confidence: 0.99307126
00:48:39.920 --> 00:48:41.360 to exploit our understanding of
NOTE Confidence: 0.99307126

00:48:41.360 --> 00:48:42.580 the evolutionary blueprint,
NOTE Confidence: 0.99988395

00:48:43.040 --> 00:48:44.100 for human groups.
NOTE Confidence: 0.9807202

00:48:44.480 --> 00:48:46.160 Now cooperation in human groups
NOTE Confidence: 0.9807202

00:48:46.160 --> 00:48:46.820 is challenging,
NOTE Confidence: 0.9733826

00:48:47.280 --> 00:48:49.140 and various mechanisms are required
NOTE Confidence: 0.9733826

00:48:49.200 --> 00:48:50.800 to sustain it, although it
NOTE Confidence: 0.9733826

00:48:50.800 --> 00:48:51.300 nevertheless
NOTE Confidence: 0.9389306

00:48:51.600 --> 00:48:52.100 usually,
NOTE Confidence: 0.95742303

00:48:52.800 --> 00:48:53.300 decays,
NOTE Confidence: 0.9825456

00:48:53.600 --> 00:48:55.675 with time. So just before
NOTE Confidence: 0.9825456

00:48:55.675 --> 00:48:56.635 I show you the top
NOTE Confidence: 0.9825456

00:48:56.635 --> 00:48:57.915 experiment I can't step away
NOTE Confidence: 0.9825456

00:48:57.915 --> 00:48:58.635 from the mic. Do you
NOTE Confidence: 0.9825456

00:48:58.635 --> 00:48:59.835 guys remember in high school
NOTE Confidence: 0.9825456

00:48:59.915 --> 00:49:00.795 sorry for all my high
NOTE Confidence: 0.9825456

00:49:00.795 --> 00:49:01.675 school illusions. It was a

NOTE Confidence: 0.9825456

00:49:01.675 --> 00:49:02.795 very traumatic period in my

NOTE Confidence: 0.9825456

00:49:02.795 --> 00:49:03.275 life.

NOTE Confidence: 0.97707754

00:49:03.755 --> 00:49:04.635 But do you remember in

NOTE Confidence: 0.97707754

00:49:04.635 --> 00:49:05.594 high school when the teacher

NOTE Confidence: 0.97707754

00:49:05.594 --> 00:49:06.315 said, okay. You four are

NOTE Confidence: 0.97707754

00:49:06.315 --> 00:49:07.355 gonna do a science project,

NOTE Confidence: 0.97707754

00:49:07.355 --> 00:49:08.234 and you four are gonna

NOTE Confidence: 0.97707754

00:49:08.234 --> 00:49:08.954 be on another team, and

NOTE Confidence: 0.97707754

00:49:08.954 --> 00:49:09.755 you four are gonna be

NOTE Confidence: 0.97707754

00:49:09.755 --> 00:49:11.010 another team. And you get

NOTE Confidence: 0.97707754

00:49:11.010 --> 00:49:12.230 put in this team here,

NOTE Confidence: 0.97707754

00:49:12.290 --> 00:49:14.130 and, you're very hardworking and

NOTE Confidence: 0.97707754

00:49:14.130 --> 00:49:15.270 you wanna get an a.

NOTE Confidence: 0.97707754

00:49:15.410 --> 00:49:16.770 And they're all lazy, and

NOTE Confidence: 0.97707754

00:49:16.770 --> 00:49:18.050 they don't give a crap

NOTE Confidence: 0.97707754

00:49:18.050 --> 00:49:19.010 about what they do. So
NOTE Confidence: 0.97707754

00:49:19.010 --> 00:49:20.230 now you have two choices.
NOTE Confidence: 0.97707754

00:49:20.370 --> 00:49:21.410 Your choices are you do
NOTE Confidence: 0.97707754

00:49:21.410 --> 00:49:22.290 all the work and they
NOTE Confidence: 0.97707754

00:49:22.290 --> 00:49:23.755 get credit for it, or
NOTE Confidence: 0.97707754

00:49:23.755 --> 00:49:24.715 you also do none of
NOTE Confidence: 0.97707754

00:49:24.715 --> 00:49:25.435 the work and you also
NOTE Confidence: 0.97707754

00:49:25.435 --> 00:49:26.715 get enough. And both of
NOTE Confidence: 0.97707754

00:49:26.715 --> 00:49:28.474 those choices suck. Right? Those
NOTE Confidence: 0.97707754

00:49:28.474 --> 00:49:29.755 are very unappealing choices. What
NOTE Confidence: 0.97707754

00:49:29.755 --> 00:49:30.635 you want is the group
NOTE Confidence: 0.97707754

00:49:30.635 --> 00:49:31.675 to be able to cooperate
NOTE Confidence: 0.97707754

00:49:31.675 --> 00:49:32.974 and everyone contribute.
NOTE Confidence: 0.9651863

00:49:33.594 --> 00:49:34.795 Now it's been quite it's
NOTE Confidence: 0.9651863

00:49:34.795 --> 00:49:36.075 been shown in multiple experiments
NOTE Confidence: 0.9651863

00:49:36.075 --> 00:49:36.955 over the last twenty or

NOTE Confidence: 0.9651863
00:49:36.955 --> 00:49:38.415 thirty years with human groups.
NOTE Confidence: 0.9651863
00:49:38.540 --> 00:49:39.339 If you take a group
NOTE Confidence: 0.9651863
00:49:39.339 --> 00:49:40.300 of people as shown in
NOTE Confidence: 0.9651863
00:49:40.300 --> 00:49:41.200 the upper left
NOTE Confidence: 0.9595112
00:49:41.900 --> 00:49:43.580 and, the blue people are
NOTE Confidence: 0.9595112
00:49:43.580 --> 00:49:45.099 the nice cooperative people, you
NOTE Confidence: 0.9595112
00:49:45.099 --> 00:49:46.060 you and you drop them
NOTE Confidence: 0.9595112
00:49:46.060 --> 00:49:46.780 in a network and you
NOTE Confidence: 0.9595112
00:49:46.780 --> 00:49:47.820 introduce them to their neighbors.
NOTE Confidence: 0.9595112
00:49:47.820 --> 00:49:48.700 So I say, you are
NOTE Confidence: 0.9595112
00:49:48.700 --> 00:49:49.580 friends with those two and
NOTE Confidence: 0.9595112
00:49:49.580 --> 00:49:50.460 they are friends with whoever
NOTE Confidence: 0.9595112
00:49:50.460 --> 00:49:51.405 else they are friends with.
NOTE Confidence: 0.9595112
00:49:51.405 --> 00:49:52.545 You make a little network
NOTE Confidence: 0.9595112
00:49:52.685 --> 00:49:53.485 and you give them a
NOTE Confidence: 0.9595112

00:49:53.485 --> 00:49:54.605 little bit of money and
NOTE Confidence: 0.9595112

00:49:54.605 --> 00:49:55.565 they can share the money
NOTE Confidence: 0.9595112

00:49:55.565 --> 00:49:56.525 with their neighbors and act
NOTE Confidence: 0.9595112

00:49:56.525 --> 00:49:57.025 altruistically,
NOTE Confidence: 0.9648454

00:49:57.565 --> 00:49:58.685 playing up what's called a
NOTE Confidence: 0.9648454

00:49:58.685 --> 00:49:59.805 public goods game, which I
NOTE Confidence: 0.9648454

00:49:59.805 --> 00:50:00.685 won't go into right now.
NOTE Confidence: 0.9648454

00:50:00.685 --> 00:50:01.565 But it's a measure of
NOTE Confidence: 0.9648454

00:50:01.565 --> 00:50:02.844 how kind you are to
NOTE Confidence: 0.9648454

00:50:02.844 --> 00:50:03.825 your, neighbors.
NOTE Confidence: 0.99673927

00:50:04.969 --> 00:50:05.369 And,
NOTE Confidence: 0.98119414

00:50:05.849 --> 00:50:06.969 and then the the blue
NOTE Confidence: 0.98119414

00:50:06.969 --> 00:50:08.489 people, they generously give to
NOTE Confidence: 0.98119414

00:50:08.489 --> 00:50:09.849 their neighbors, and their neighbors
NOTE Confidence: 0.98119414

00:50:09.849 --> 00:50:10.969 benefit, and they and they
NOTE Confidence: 0.98119414

00:50:10.969 --> 00:50:12.410 pay a price. The red

NOTE Confidence: 0.98119414

00:50:12.410 --> 00:50:14.349 people are are are leeches.

NOTE Confidence: 0.98119414

00:50:14.410 --> 00:50:15.289 They're like the people. They

NOTE Confidence: 0.98119414

00:50:15.289 --> 00:50:16.089 don't help you with the

NOTE Confidence: 0.98119414

00:50:16.089 --> 00:50:17.770 assignment. They just rely on

NOTE Confidence: 0.98119414

00:50:17.770 --> 00:50:19.005 on you doing the work.

NOTE Confidence: 0.98119414

00:50:19.085 --> 00:50:19.724 They just say, I'm not

NOTE Confidence: 0.98119414

00:50:19.724 --> 00:50:21.244 gonna contribute anything. I'm just

NOTE Confidence: 0.98119414

00:50:21.244 --> 00:50:22.525 gonna let everyone else contribute,

NOTE Confidence: 0.98119414

00:50:22.525 --> 00:50:23.884 and I'll benefit from it.

NOTE Confidence: 0.98119414

00:50:23.884 --> 00:50:25.025 So they're the defectors.

NOTE Confidence: 0.9647512

00:50:25.404 --> 00:50:26.605 And what's been found in

NOTE Confidence: 0.9647512

00:50:26.605 --> 00:50:27.724 our experiments and in many

NOTE Confidence: 0.9647512

00:50:27.724 --> 00:50:28.924 other labs experiments is that

NOTE Confidence: 0.9647512

00:50:28.924 --> 00:50:30.364 what happens over time is

NOTE Confidence: 0.9647512

00:50:30.364 --> 00:50:32.525 that cooperation takes I'm sorry.

NOTE Confidence: 0.9647512

00:50:32.525 --> 00:50:33.900 Defection takes over the system.
NOTE Confidence: 0.9847508

00:50:34.380 --> 00:50:35.420 So you start out being
NOTE Confidence: 0.9847508

00:50:35.420 --> 00:50:36.299 nice to your neighbors, but
NOTE Confidence: 0.9847508

00:50:36.299 --> 00:50:37.660 they exploit you. And after
NOTE Confidence: 0.9847508

00:50:37.660 --> 00:50:38.299 a few rounds of this,
NOTE Confidence: 0.9847508

00:50:38.299 --> 00:50:38.859 you say, well, I'm not
NOTE Confidence: 0.9847508

00:50:38.859 --> 00:50:39.900 gonna be a dummy. So
NOTE Confidence: 0.9847508

00:50:39.900 --> 00:50:41.119 then you switch to defection.
NOTE Confidence: 0.9847508

00:50:41.260 --> 00:50:42.219 And by the end, the
NOTE Confidence: 0.9847508

00:50:42.219 --> 00:50:43.760 world is overrun with defectors
NOTE Confidence: 0.9847508

00:50:43.819 --> 00:50:44.779 where no one is nice
NOTE Confidence: 0.9847508

00:50:44.779 --> 00:50:46.140 to each other. In a
NOTE Confidence: 0.9847508

00:50:46.140 --> 00:50:47.599 different branch of the experiment,
NOTE Confidence: 0.9847508

00:50:47.745 --> 00:50:48.785 what we did is is
NOTE Confidence: 0.9847508

00:50:48.785 --> 00:50:50.065 we we added some bots
NOTE Confidence: 0.9847508

00:50:50.065 --> 00:50:50.885 to the system

NOTE Confidence: 0.8966419

00:50:51.185 --> 00:50:52.485 shown by that little cartoon.

NOTE Confidence: 0.9798992

00:50:52.785 --> 00:50:53.985 And the bot had some

NOTE Confidence: 0.9798992

00:50:53.985 --> 00:50:55.585 very simple programming in it.

NOTE Confidence: 0.9798992

00:50:55.585 --> 00:50:56.465 All the bot did is

NOTE Confidence: 0.9798992

00:50:56.465 --> 00:50:57.185 it was connected to a

NOTE Confidence: 0.9798992

00:50:57.185 --> 00:50:58.465 certain subset of people like

NOTE Confidence: 0.9798992

00:50:58.465 --> 00:50:59.745 a real human would be,

NOTE Confidence: 0.9798992

00:50:59.745 --> 00:51:00.705 and it would look around

NOTE Confidence: 0.9798992

00:51:00.705 --> 00:51:01.800 at its neighbors and it

NOTE Confidence: 0.9798992

00:51:01.800 --> 00:51:02.920 would make recommendations to the

NOTE Confidence: 0.9798992

00:51:02.920 --> 00:51:04.120 neighbors. You know what? You

NOTE Confidence: 0.9798992

00:51:04.120 --> 00:51:05.080 might wanna cut the tie

NOTE Confidence: 0.9798992

00:51:05.080 --> 00:51:06.040 to that person that's taking

NOTE Confidence: 0.9798992

00:51:06.040 --> 00:51:06.840 advantage of you. Don't be

NOTE Confidence: 0.9798992

00:51:06.840 --> 00:51:07.820 friends with them anymore.

NOTE Confidence: 0.9232761

00:51:08.120 --> 00:51:09.980 And that tiny little intervention

NOTE Confidence: 0.9983387

00:51:10.280 --> 00:51:11.880 was able to preserve and

NOTE Confidence: 0.9983387

00:51:11.880 --> 00:51:13.320 increase the level of cooperation

NOTE Confidence: 0.9983387

00:51:13.320 --> 00:51:14.594 in the system. So a

NOTE Confidence: 0.9983387

00:51:14.594 --> 00:51:16.035 little bit of rewiring, a

NOTE Confidence: 0.9983387

00:51:16.035 --> 00:51:17.335 little bit of social engineering

NOTE Confidence: 0.84639406

00:51:17.635 --> 00:51:18.614 where these bots,

NOTE Confidence: 0.7102289

00:51:19.795 --> 00:51:20.295 working,

NOTE Confidence: 0.94991755

00:51:21.475 --> 00:51:23.075 in a decentralized way. There's

NOTE Confidence: 0.94991755

00:51:23.075 --> 00:51:24.994 no police officer saying, be

NOTE Confidence: 0.94991755

00:51:24.994 --> 00:51:26.520 nice. Each little bot just

NOTE Confidence: 0.94991755

00:51:26.600 --> 00:51:27.400 just looking at its own

NOTE Confidence: 0.94991755

00:51:27.400 --> 00:51:29.560 immediate neighborhood, making small changes

NOTE Confidence: 0.94991755

00:51:29.560 --> 00:51:31.020 in who's connected to whom

NOTE Confidence: 0.95070523

00:51:31.320 --> 00:51:33.000 allows the human beings to

NOTE Confidence: 0.95070523

00:51:33.000 --> 00:51:34.600 sustain the cooperation with which

NOTE Confidence: 0.95070523

00:51:34.600 --> 00:51:36.040 they were naturally endowed and

NOTE Confidence: 0.95070523

00:51:36.040 --> 00:51:37.340 which they might have begun,

NOTE Confidence: 0.9996063

00:51:37.719 --> 00:51:38.540 at the beginning.

NOTE Confidence: 0.9964992

00:51:40.315 --> 00:51:41.915 So by exploiting ideas about

NOTE Confidence: 0.9964992

00:51:41.915 --> 00:51:43.995 identity, networks, cooperation, and social

NOTE Confidence: 0.9964992

00:51:43.995 --> 00:51:46.175 learning, simple artificial intelligence

NOTE Confidence: 0.9993598

00:51:46.475 --> 00:51:47.775 can increase the cooperation

NOTE Confidence: 0.9997647

00:51:48.155 --> 00:51:48.895 of groups.

NOTE Confidence: 0.9964699

00:51:49.915 --> 00:51:51.435 Now in other recent experiments,

NOTE Confidence: 0.9964699

00:51:51.435 --> 00:51:52.555 we've also begun to add

NOTE Confidence: 0.9964699

00:51:52.555 --> 00:51:53.535 bots with AI

NOTE Confidence: 0.99852955

00:51:53.840 --> 00:51:54.960 to face to face groups

NOTE Confidence: 0.99852955

00:51:54.960 --> 00:51:55.620 of humans,

NOTE Confidence: 0.99897796

00:51:56.400 --> 00:51:57.360 and show that we can

NOTE Confidence: 0.99897796

00:51:57.360 --> 00:51:58.400 make it easier for groups

NOTE Confidence: 0.99897796

00:51:58.400 --> 00:51:59.780 of humans to work together
NOTE Confidence: 0.99897796

00:51:59.920 --> 00:52:01.300 by helping them to overcome
NOTE Confidence: 0.99406016

00:52:01.600 --> 00:52:03.460 friction in their social interactions.
NOTE Confidence: 0.9834293

00:52:03.760 --> 00:52:05.040 And we've begun to experiment
NOTE Confidence: 0.9834293

00:52:05.040 --> 00:52:06.100 with physical systems,
NOTE Confidence: 0.96094173

00:52:06.435 --> 00:52:08.275 seeing how physical robots, again
NOTE Confidence: 0.96094173

00:52:08.275 --> 00:52:09.475 endowed with simple kinds of
NOTE Confidence: 0.96094173

00:52:09.475 --> 00:52:09.975 AI,
NOTE Confidence: 0.9997207

00:52:10.275 --> 00:52:12.035 can change how people interact
NOTE Confidence: 0.9997207

00:52:12.035 --> 00:52:12.855 with each other.
NOTE Confidence: 0.9985746

00:52:13.315 --> 00:52:14.775 For instance, in this experiment,
NOTE Confidence: 0.91857195

00:52:15.795 --> 00:52:16.755 which was just published in
NOTE Confidence: 0.91857195

00:52:16.755 --> 00:52:17.395 P and S a few
NOTE Confidence: 0.91857195

00:52:17.395 --> 00:52:18.755 years ago now by, my
NOTE Confidence: 0.91857195

00:52:18.755 --> 00:52:20.275 former graduate student, Maggie Traeger,
NOTE Confidence: 0.91857195

00:52:20.275 --> 00:52:21.575 in the sociology department,

NOTE Confidence: 0.9654885

00:52:22.569 --> 00:52:23.210 what we did in this

NOTE Confidence: 0.9654885

00:52:23.210 --> 00:52:24.750 experiment working with Brian Scassellati's

NOTE Confidence: 0.9654885

00:52:24.890 --> 00:52:26.589 lab, a roboticist at Yale,

NOTE Confidence: 0.9654885

00:52:26.730 --> 00:52:28.170 is we, we took groups

NOTE Confidence: 0.9654885

00:52:28.170 --> 00:52:29.690 of four people I'm sorry,

NOTE Confidence: 0.9654885

00:52:29.690 --> 00:52:31.050 three humans and one humanoid

NOTE Confidence: 0.9654885

00:52:31.050 --> 00:52:31.550 robot,

NOTE Confidence: 0.97400486

00:52:31.930 --> 00:52:32.890 and we made a little

NOTE Confidence: 0.97400486

00:52:32.890 --> 00:52:33.930 game that was played on

NOTE Confidence: 0.97400486

00:52:33.930 --> 00:52:35.545 a tablet computer where it

NOTE Confidence: 0.97400486

00:52:35.545 --> 00:52:36.985 was like like like Thomas

NOTE Confidence: 0.97400486

00:52:36.985 --> 00:52:38.344 the Tank Engine game where

NOTE Confidence: 0.97400486

00:52:38.344 --> 00:52:39.225 you had to, like, lay

NOTE Confidence: 0.97400486

00:52:39.225 --> 00:52:40.505 railroad tracks. They were straight

NOTE Confidence: 0.97400486

00:52:40.505 --> 00:52:42.025 pieces and curved pieces to

NOTE Confidence: 0.97400486

00:52:42.025 --> 00:52:43.065 connect point a to point
NOTE Confidence: 0.97400486

00:52:43.065 --> 00:52:43.945 b. So the group had
NOTE Confidence: 0.97400486

00:52:43.945 --> 00:52:45.465 to work together, everyone taking
NOTE Confidence: 0.97400486

00:52:45.465 --> 00:52:46.425 a turn laying a piece
NOTE Confidence: 0.97400486

00:52:46.425 --> 00:52:47.625 of track to get from
NOTE Confidence: 0.97400486

00:52:47.625 --> 00:52:48.719 point a to point b.
NOTE Confidence: 0.97400486

00:52:48.880 --> 00:52:50.640 But we secretly contrived sometimes
NOTE Confidence: 0.97400486

00:52:50.640 --> 00:52:51.680 to make it impossible to
NOTE Confidence: 0.97400486

00:52:51.680 --> 00:52:52.640 connect the two points. There
NOTE Confidence: 0.97400486

00:52:52.640 --> 00:52:54.000 weren't enough left turning and
NOTE Confidence: 0.97400486

00:52:54.000 --> 00:52:55.520 right turning pieces to get
NOTE Confidence: 0.97400486

00:52:55.520 --> 00:52:56.400 from point a to point
NOTE Confidence: 0.97400486

00:52:56.400 --> 00:52:57.359 b. So sometimes the game
NOTE Confidence: 0.97400486

00:52:57.359 --> 00:52:58.480 is very frustrating. It literally
NOTE Confidence: 0.97400486

00:52:58.480 --> 00:52:59.760 couldn't be solved even though
NOTE Confidence: 0.97400486

00:52:59.760 --> 00:53:01.200 they're taking turns. And what

NOTE Confidence: 0.97400486
00:53:01.200 --> 00:53:02.000 we did in this game
NOTE Confidence: 0.97400486
00:53:02.000 --> 00:53:02.980 is is we experimentally
NOTE Confidence: 0.9992956
00:53:03.280 --> 00:53:03.780 manipulated
NOTE Confidence: 0.9997878
00:53:04.224 --> 00:53:05.204 whether the robot
NOTE Confidence: 0.9991967
00:53:05.665 --> 00:53:06.885 told dad jokes.
NOTE Confidence: 0.98921484
00:53:07.505 --> 00:53:08.005 Now
NOTE Confidence: 0.92973304
00:53:08.385 --> 00:53:09.665 What? I'm not kidding. And,
NOTE Confidence: 0.92973304
00:53:09.665 --> 00:53:10.464 actually, turns out, by the
NOTE Confidence: 0.92973304
00:53:10.464 --> 00:53:11.265 way, that dad jokes are
NOTE Confidence: 0.92973304
00:53:11.265 --> 00:53:12.545 cultural universal. If you go
NOTE Confidence: 0.92973304
00:53:12.545 --> 00:53:13.825 talk to the Kapauku Papuans
NOTE Confidence: 0.92973304
00:53:13.825 --> 00:53:15.105 in New Guinea or the
NOTE Confidence: 0.92973304
00:53:15.105 --> 00:53:16.565 Tsimane in in Amazonia,
NOTE Confidence: 0.9197336
00:53:17.270 --> 00:53:18.070 they say, oh, yes. The
NOTE Confidence: 0.9197336
00:53:18.070 --> 00:53:19.510 dads here tell awful jokes
NOTE Confidence: 0.9197336

00:53:19.510 --> 00:53:20.469 and the kids can't stand
NOTE Confidence: 0.9197336

00:53:20.469 --> 00:53:20.969 it.
NOTE Confidence: 0.96103877

00:53:21.670 --> 00:53:23.190 And, it's felt that this
NOTE Confidence: 0.96103877

00:53:23.190 --> 00:53:23.989 is actually a kind of
NOTE Confidence: 0.96103877

00:53:23.989 --> 00:53:24.790 a way yes. It's a
NOTE Confidence: 0.96103877

00:53:24.790 --> 00:53:25.510 kind of way to toughen
NOTE Confidence: 0.96103877

00:53:25.510 --> 00:53:26.550 up your kids. It's like
NOTE Confidence: 0.96103877

00:53:26.550 --> 00:53:28.150 a cultural universal like that
NOTE Confidence: 0.96103877

00:53:28.150 --> 00:53:29.349 dads tell dad jokes. Anyway,
NOTE Confidence: 0.96103877

00:53:29.349 --> 00:53:30.710 we program these robots to
NOTE Confidence: 0.96103877

00:53:30.710 --> 00:53:31.885 tell really silly I can't
NOTE Confidence: 0.96103877

00:53:31.885 --> 00:53:32.845 even remember how stupid they
NOTE Confidence: 0.96103877

00:53:32.845 --> 00:53:33.645 were. They were like, trust
NOTE Confidence: 0.96103877

00:53:33.645 --> 00:53:34.925 me. They were stupid dad
NOTE Confidence: 0.96103877

00:53:34.925 --> 00:53:36.125 jokes. Like, you know, why
NOTE Confidence: 0.96103877

00:53:36.125 --> 00:53:36.925 does a robot not have

NOTE Confidence: 0.96103877
00:53:36.925 --> 00:53:37.725 friends or something? I don't
NOTE Confidence: 0.96103877
00:53:37.725 --> 00:53:38.385 even remember.
NOTE Confidence: 0.9900602
00:53:38.925 --> 00:53:40.285 And to show vulnerability in
NOTE Confidence: 0.9900602
00:53:40.285 --> 00:53:41.565 other ways. And then we
NOTE Confidence: 0.9900602
00:53:41.565 --> 00:53:42.765 had video cameras on these
NOTE Confidence: 0.9900602
00:53:42.765 --> 00:53:43.965 groups, and we looked at
NOTE Confidence: 0.9900602
00:53:43.965 --> 00:53:45.245 how often the humans spoke
NOTE Confidence: 0.9900602
00:53:45.245 --> 00:53:46.145 to each other.
NOTE Confidence: 0.9506724
00:53:47.040 --> 00:53:48.719 And, and the thickness of
NOTE Confidence: 0.9506724
00:53:48.719 --> 00:53:50.560 the lines indicates gaze and
NOTE Confidence: 0.9506724
00:53:50.560 --> 00:53:51.219 the communication
NOTE Confidence: 0.99843454
00:53:51.600 --> 00:53:52.980 between the human beings.
NOTE Confidence: 0.9667194
00:53:53.440 --> 00:53:55.040 We sometimes the robot had
NOTE Confidence: 0.9667194
00:53:55.040 --> 00:53:56.800 very neutral statements like, you
NOTE Confidence: 0.9667194
00:53:56.800 --> 00:53:58.080 know, we are we just
NOTE Confidence: 0.9667194

00:53:58.080 --> 00:53:59.200 played the sixth round, and
NOTE Confidence: 0.9667194

00:53:59.200 --> 00:54:00.260 we did not succeed.
NOTE Confidence: 0.9747251

00:54:01.175 --> 00:54:02.614 Or the robot would say,
NOTE Confidence: 0.9747251

00:54:02.614 --> 00:54:03.655 we just played the sixth
NOTE Confidence: 0.9747251

00:54:03.655 --> 00:54:04.695 round and I made a
NOTE Confidence: 0.9747251

00:54:04.695 --> 00:54:06.395 mistake, so showing vulnerability.
NOTE Confidence: 0.974504

00:54:06.775 --> 00:54:07.815 And we found that the
NOTE Confidence: 0.974504

00:54:07.815 --> 00:54:09.415 volume of communication between the
NOTE Confidence: 0.974504

00:54:09.415 --> 00:54:11.335 people, the satisfaction the people
NOTE Confidence: 0.974504

00:54:11.335 --> 00:54:12.715 had with their social group,
NOTE Confidence: 0.974504

00:54:12.775 --> 00:54:14.475 and and many other outcomes
NOTE Confidence: 0.974504

00:54:14.695 --> 00:54:15.515 were optimized
NOTE Confidence: 0.9932818

00:54:15.895 --> 00:54:18.820 by simple, tiny, trivial changes
NOTE Confidence: 0.9932818

00:54:19.040 --> 00:54:20.480 in the communication that we
NOTE Confidence: 0.9932818

00:54:20.480 --> 00:54:22.500 endowed these robots to have.
NOTE Confidence: 0.9844543

00:54:24.080 --> 00:54:25.680 Shifts in robot speech have

NOTE Confidence: 0.9844543

00:54:25.680 --> 00:54:26.800 the power not only to

NOTE Confidence: 0.9844543

00:54:26.800 --> 00:54:28.160 affect how people interact with

NOTE Confidence: 0.9844543

00:54:28.160 --> 00:54:29.600 robots, but also how people

NOTE Confidence: 0.9844543

00:54:29.600 --> 00:54:31.215 interact with each other, offering

NOTE Confidence: 0.9844543

00:54:31.215 --> 00:54:32.975 the prospect for modifying social

NOTE Confidence: 0.9844543

00:54:32.975 --> 00:54:33.475 interactions

NOTE Confidence: 0.9996606

00:54:33.775 --> 00:54:35.295 via the introduction of artificial

NOTE Confidence: 0.9996606

00:54:35.295 --> 00:54:37.455 agents into hybrid systems of

NOTE Confidence: 0.9996606

00:54:37.455 --> 00:54:38.675 humans and machines.

NOTE Confidence: 0.99468994

00:54:39.775 --> 00:54:41.614 So in short, humans can

NOTE Confidence: 0.99468994

00:54:41.614 --> 00:54:42.975 learn to interact better by

NOTE Confidence: 0.99468994

00:54:42.975 --> 00:54:44.450 having bots among them and

NOTE Confidence: 0.99468994

00:54:44.450 --> 00:54:45.809 not just among those humans

NOTE Confidence: 0.99468994

00:54:45.809 --> 00:54:47.349 directly connected to the bots.

NOTE Confidence: 0.96792066

00:54:47.650 --> 00:54:48.849 The bots help the humans

NOTE Confidence: 0.96792066

00:54:48.849 --> 00:54:50.289 to help themselves. And we're
NOTE Confidence: 0.96792066

00:54:50.289 --> 00:54:51.329 building on this work to
NOTE Confidence: 0.96792066

00:54:51.329 --> 00:54:52.769 design and add simple bots
NOTE Confidence: 0.96792066

00:54:52.769 --> 00:54:54.049 to these as shown here
NOTE Confidence: 0.96792066

00:54:54.049 --> 00:54:54.950 in other situations
NOTE Confidence: 0.8817355

00:54:55.329 --> 00:54:57.269 involving diverse social dilemmas
NOTE Confidence: 0.99772274

00:54:57.594 --> 00:54:59.035 and collective action problems. So
NOTE Confidence: 0.99772274

00:54:59.035 --> 00:54:59.915 we've shown that we can
NOTE Confidence: 0.99772274

00:54:59.915 --> 00:55:01.675 program simple bots to enhance
NOTE Confidence: 0.99772274

00:55:01.675 --> 00:55:03.135 the human ability for coordination,
NOTE Confidence: 0.99772274

00:55:03.195 --> 00:55:03.695 cooperation,
NOTE Confidence: 0.9955487

00:55:04.715 --> 00:55:05.215 communication,
NOTE Confidence: 0.9883858

00:55:05.594 --> 00:55:06.815 evacuation, navigation,
NOTE Confidence: 0.9957757

00:55:07.114 --> 00:55:07.855 and sharing.
NOTE Confidence: 0.9790001

00:55:08.235 --> 00:55:09.675 And my argument is that
NOTE Confidence: 0.9790001

00:55:09.675 --> 00:55:11.349 hybrid systems will need to

NOTE Confidence: 0.9790001
00:55:11.349 --> 00:55:13.349 respect the social suite if
NOTE Confidence: 0.9790001
00:55:13.349 --> 00:55:14.630 they are to facilitate a
NOTE Confidence: 0.9790001
00:55:14.630 --> 00:55:15.130 utopian
NOTE Confidence: 0.98684686
00:55:15.430 --> 00:55:17.589 rather than dystopian future. It's
NOTE Confidence: 0.98684686
00:55:17.589 --> 00:55:19.050 not hard actually to imagine
NOTE Confidence: 0.98684686
00:55:19.109 --> 00:55:20.310 how you could reverse engineer
NOTE Confidence: 0.98684686
00:55:20.310 --> 00:55:21.349 some of these ideas and
NOTE Confidence: 0.98684686
00:55:21.349 --> 00:55:22.869 make us worse off, not
NOTE Confidence: 0.98684686
00:55:22.869 --> 00:55:23.690 better off.
NOTE Confidence: 0.996987
00:55:24.665 --> 00:55:25.945 Okay. I'd like to close
NOTE Confidence: 0.996987
00:55:25.945 --> 00:55:27.545 with two slides and one
NOTE Confidence: 0.996987
00:55:27.545 --> 00:55:28.025 final,
NOTE Confidence: 0.8681219
00:55:28.344 --> 00:55:29.165 big idea.
NOTE Confidence: 0.99958354
00:55:30.265 --> 00:55:31.385 Because our focus on the
NOTE Confidence: 0.99958354
00:55:31.385 --> 00:55:32.844 social origins of goodness
NOTE Confidence: 0.98838335

00:55:33.145 --> 00:55:34.665 also highlights something else that

NOTE Confidence: 0.98838335

00:55:34.665 --> 00:55:35.945 is very profound in my

NOTE Confidence: 0.98838335

00:55:35.945 --> 00:55:36.445 view.

NOTE Confidence: 0.98875237

00:55:37.080 --> 00:55:39.340 Most human virtues are social,

NOTE Confidence: 0.8076224

00:55:40.040 --> 00:55:40.540 arising,

NOTE Confidence: 0.99972475

00:55:41.000 --> 00:55:42.440 from the investment in the

NOTE Confidence: 0.99972475

00:55:42.440 --> 00:55:43.420 lives of others.

NOTE Confidence: 0.98721856

00:55:43.720 --> 00:55:44.840 We do not care very

NOTE Confidence: 0.98721856

00:55:44.840 --> 00:55:46.140 much if you love yourself

NOTE Confidence: 0.98721856

00:55:46.360 --> 00:55:47.580 or are kind to yourself

NOTE Confidence: 0.98721856

00:55:47.800 --> 00:55:49.420 or are just to yourself.

NOTE Confidence: 0.99889094

00:55:49.800 --> 00:55:51.239 We care whether you manifest

NOTE Confidence: 0.99889094

00:55:51.239 --> 00:55:53.114 these virtues to other human

NOTE Confidence: 0.99889094

00:55:53.114 --> 00:55:53.614 beings.

NOTE Confidence: 0.97149974

00:55:54.075 --> 00:55:54.795 And so I'd like to

NOTE Confidence: 0.97149974

00:55:54.795 --> 00:55:56.175 close with a final idea,

NOTE Confidence: 0.97149974
00:55:56.315 --> 00:55:57.515 which is to ask, what
NOTE Confidence: 0.97149974
00:55:57.515 --> 00:55:59.275 accounts for our species general
NOTE Confidence: 0.97149974
00:55:59.275 --> 00:56:01.355 success in living together in
NOTE Confidence: 0.97149974
00:56:01.355 --> 00:56:02.235 the face of all of
NOTE Confidence: 0.97149974
00:56:02.235 --> 00:56:02.895 our defects
NOTE Confidence: 0.96966326
00:56:03.275 --> 00:56:04.015 and differences?
NOTE Confidence: 0.9996974
00:56:04.715 --> 00:56:05.995 How can we understand the
NOTE Confidence: 0.9996974
00:56:05.995 --> 00:56:07.455 goodness of the social world
NOTE Confidence: 0.9954767
00:56:07.820 --> 00:56:08.960 despite the badness?
NOTE Confidence: 0.9862299
00:56:09.500 --> 00:56:10.480 Now in theology,
NOTE Confidence: 0.99724436
00:56:11.020 --> 00:56:11.820 this is known as a
NOTE Confidence: 0.99724436
00:56:11.820 --> 00:56:12.880 question of theodicy.
NOTE Confidence: 0.96995926
00:56:13.500 --> 00:56:14.700 How is God to be
NOTE Confidence: 0.96995926
00:56:14.700 --> 00:56:15.820 justified in the face of
NOTE Confidence: 0.96995926
00:56:15.820 --> 00:56:16.540 all the evil in the
NOTE Confidence: 0.96995926

00:56:16.540 --> 00:56:17.420 world? Right? This is an
NOTE Confidence: 0.96995926

00:56:17.420 --> 00:56:18.700 ancient problem. You know, if
NOTE Confidence: 0.96995926

00:56:18.700 --> 00:56:20.380 God is omnipotent, omniscient, and
NOTE Confidence: 0.96995926

00:56:20.380 --> 00:56:21.040 and beneficent,
NOTE Confidence: 0.97749543

00:56:21.525 --> 00:56:22.484 now the ancient Greek gods
NOTE Confidence: 0.97749543

00:56:22.484 --> 00:56:23.605 weren't beneficent, but, you know,
NOTE Confidence: 0.97749543

00:56:23.605 --> 00:56:24.885 the monotheistic god was supposed
NOTE Confidence: 0.97749543

00:56:24.885 --> 00:56:26.085 to be beneficent, how come
NOTE Confidence: 0.97749543

00:56:26.085 --> 00:56:27.045 there's so much suffering in
NOTE Confidence: 0.97749543

00:56:27.045 --> 00:56:28.164 the world? How come there's
NOTE Confidence: 0.97749543

00:56:28.164 --> 00:56:28.885 so much evil in the
NOTE Confidence: 0.97749543

00:56:28.885 --> 00:56:29.765 world? How can this be?
NOTE Confidence: 0.97749543

00:56:29.765 --> 00:56:31.285 This is a difficult and
NOTE Confidence: 0.97749543

00:56:31.285 --> 00:56:32.984 old theological problem.
NOTE Confidence: 0.96807146

00:56:33.444 --> 00:56:34.244 But I would like to,
NOTE Confidence: 0.96807146

00:56:34.404 --> 00:56:35.785 because but I believe analogously

NOTE Confidence: 0.96807146

00:56:35.924 --> 00:56:36.724 that we can focus on

NOTE Confidence: 0.96807146

00:56:36.724 --> 00:56:38.160 what I call sociodyssey.

NOTE Confidence: 0.98638636

00:56:38.620 --> 00:56:39.840 And this is the vindication

NOTE Confidence: 0.98638636

00:56:39.980 --> 00:56:41.100 of our confidence in the

NOTE Confidence: 0.98638636

00:56:41.100 --> 00:56:42.400 virtue of the society

NOTE Confidence: 0.92952186

00:56:42.700 --> 00:56:43.280 of society

NOTE Confidence: 0.97963184

00:56:43.660 --> 00:56:45.200 despite its numerous failures

NOTE Confidence: 0.9823877

00:56:45.660 --> 00:56:47.580 so obvious to everyone. Right?

NOTE Confidence: 0.9823877

00:56:47.580 --> 00:56:48.540 Like, you can look at

NOTE Confidence: 0.9823877

00:56:48.540 --> 00:56:50.060 any century and it's replete

NOTE Confidence: 0.9823877

00:56:50.060 --> 00:56:52.140 with horrors, with pogroms, with

NOTE Confidence: 0.9823877

00:56:52.140 --> 00:56:54.415 slavery, with colonialism, with violence,

NOTE Confidence: 0.9823877

00:56:54.415 --> 00:56:56.094 with torture, with cruelty. I'm

NOTE Confidence: 0.9823877

00:56:56.094 --> 00:56:57.775 not ignorant. I'm not unaware

NOTE Confidence: 0.9823877

00:56:57.775 --> 00:56:59.694 of these horrible capacities that

NOTE Confidence: 0.9823877

00:56:59.694 --> 00:57:01.135 we have. But equally, we
NOTE Confidence: 0.9823877

00:57:01.135 --> 00:57:02.675 are capable of great goodness.
NOTE Confidence: 0.9823877

00:57:02.734 --> 00:57:03.535 And so the question is,
NOTE Confidence: 0.9823877

00:57:03.535 --> 00:57:05.295 how can we reconcile these
NOTE Confidence: 0.9823877

00:57:05.295 --> 00:57:05.954 two things?
NOTE Confidence: 0.97143036

00:57:06.400 --> 00:57:07.280 And to my view, it's
NOTE Confidence: 0.97143036

00:57:07.280 --> 00:57:08.480 in keeping with the Japanese
NOTE Confidence: 0.97143036

00:57:08.480 --> 00:57:10.820 aesthetic philosophy of wabi sabi,
NOTE Confidence: 0.99513805

00:57:11.120 --> 00:57:13.060 which highlights the flawed beauty
NOTE Confidence: 0.99513805

00:57:13.280 --> 00:57:15.140 of natural and artificial things.
NOTE Confidence: 0.99513805

00:57:15.200 --> 00:57:16.720 So to the Japanese eye
NOTE Confidence: 0.99513805

00:57:16.720 --> 00:57:18.320 and to my eye, this
NOTE Confidence: 0.99513805

00:57:18.320 --> 00:57:19.974 is a beautiful bowl. This
NOTE Confidence: 0.99513805

00:57:19.974 --> 00:57:20.795 is a magnificently
NOTE Confidence: 0.966634

00:57:21.175 --> 00:57:22.775 beautiful bowl. And think about
NOTE Confidence: 0.966634

00:57:22.775 --> 00:57:24.234 how this aesthetic is different

NOTE Confidence: 0.966634

00:57:24.454 --> 00:57:25.895 than the the kind of,

NOTE Confidence: 0.966634

00:57:25.895 --> 00:57:28.295 you know, Versailles porcelain. Right?

NOTE Confidence: 0.966634

00:57:28.295 --> 00:57:29.734 So the Versailles porcelain is

NOTE Confidence: 0.966634

00:57:29.734 --> 00:57:32.375 absolutely perfect, perfectly symmetrical, beautifully

NOTE Confidence: 0.966634

00:57:32.375 --> 00:57:33.990 painted, no flaws, and that's

NOTE Confidence: 0.966634

00:57:33.990 --> 00:57:35.350 considered beautiful in a kinda

NOTE Confidence: 0.966634

00:57:35.350 --> 00:57:36.890 more western kind of aesthetic.

NOTE Confidence: 0.966634

00:57:36.950 --> 00:57:37.990 Or look at the difference

NOTE Confidence: 0.966634

00:57:37.990 --> 00:57:40.150 between topiary and Versailles where

NOTE Confidence: 0.966634

00:57:40.150 --> 00:57:41.510 the bushes are, like, made

NOTE Confidence: 0.966634

00:57:41.510 --> 00:57:43.030 into circles and pyramids and

NOTE Confidence: 0.966634

00:57:43.030 --> 00:57:44.810 so on or bonsai trees.

NOTE Confidence: 0.966634

00:57:45.030 --> 00:57:46.310 Right? I think bonsai trees

NOTE Confidence: 0.966634

00:57:46.310 --> 00:57:48.825 are miraculously beautiful. Right? Broken,

NOTE Confidence: 0.966634

00:57:48.825 --> 00:57:50.125 bent over, asymmetric.

NOTE Confidence: 0.99913406
00:57:50.425 --> 00:57:50.925 Right?
NOTE Confidence: 0.98849237
00:57:51.225 --> 00:57:52.905 Flawed in some way, but
NOTE Confidence: 0.98849237
00:57:52.905 --> 00:57:54.685 still so beautiful and natural.
NOTE Confidence: 0.9962824
00:57:56.265 --> 00:57:58.025 And so so so this
NOTE Confidence: 0.9962824
00:57:58.025 --> 00:57:58.845 this perspective
NOTE Confidence: 0.91985804
00:57:59.225 --> 00:58:00.585 on human beings, this this
NOTE Confidence: 0.91985804
00:58:00.585 --> 00:58:02.025 vindication in our confidence in
NOTE Confidence: 0.91985804
00:58:02.025 --> 00:58:03.060 their goodness despite
NOTE Confidence: 0.5124004
00:58:06.260 --> 00:58:06.760 idle
NOTE Confidence: 0.9483955
00:58:07.060 --> 00:58:08.680 optimism. Rather, it's a recognition
NOTE Confidence: 0.9483955
00:58:08.820 --> 00:58:10.180 of the fundamental good that
NOTE Confidence: 0.9483955
00:58:10.180 --> 00:58:11.780 lies within us. As I
NOTE Confidence: 0.9483955
00:58:11.780 --> 00:58:12.740 said, it's tempting to look
NOTE Confidence: 0.9483955
00:58:12.740 --> 00:58:14.260 at human history as full
NOTE Confidence: 0.9483955
00:58:14.260 --> 00:58:16.120 of abject misery and dysfunction
NOTE Confidence: 0.89197475

00:58:16.580 --> 00:58:18.120 and as replete with horrors.
NOTE Confidence: 0.99492687

00:58:18.525 --> 00:58:19.825 And there was, of course,
NOTE Confidence: 0.99492687

00:58:19.964 --> 00:58:21.724 a dramatic inflection for the
NOTE Confidence: 0.99492687

00:58:21.724 --> 00:58:23.085 better that occurred in the
NOTE Confidence: 0.99492687

00:58:23.085 --> 00:58:24.684 eighteenth century with the arrival
NOTE Confidence: 0.99492687

00:58:24.684 --> 00:58:25.424 of the enlightenment
NOTE Confidence: 0.9819449

00:58:25.724 --> 00:58:27.484 and the philosophical values and
NOTE Confidence: 0.9819449

00:58:27.484 --> 00:58:29.405 scientific discoveries that happened at
NOTE Confidence: 0.9819449

00:58:29.405 --> 00:58:30.924 that time. So Steven Pinker
NOTE Confidence: 0.9819449

00:58:30.924 --> 00:58:32.285 and others have been advancing
NOTE Confidence: 0.9819449

00:58:32.285 --> 00:58:33.645 the argument correctly in my
NOTE Confidence: 0.9819449

00:58:33.645 --> 00:58:35.700 view that that the European
NOTE Confidence: 0.9819449

00:58:35.700 --> 00:58:37.400 enlightenment, which began these philosophical
NOTE Confidence: 0.9819449

00:58:37.460 --> 00:58:40.360 ideas, antislavery ideas, democratic principles,
NOTE Confidence: 0.9932482

00:58:40.900 --> 00:58:42.820 commitment to reason, which started
NOTE Confidence: 0.9932482

00:58:42.820 --> 00:58:43.940 in Europe and gradually spread

NOTE Confidence: 0.9932482

00:58:43.940 --> 00:58:44.660 around the world. By the

NOTE Confidence: 0.9932482

00:58:44.660 --> 00:58:45.480 way, monogamy,

NOTE Confidence: 0.99731356

00:58:46.100 --> 00:58:47.300 starts in Europe and spreads

NOTE Confidence: 0.99731356

00:58:47.300 --> 00:58:48.075 around the world.

NOTE Confidence: 0.9685558

00:58:48.555 --> 00:58:49.515 All of these things that

NOTE Confidence: 0.9685558

00:58:49.515 --> 00:58:50.875 began during the enlightenment plus

NOTE Confidence: 0.9685558

00:58:50.875 --> 00:58:53.195 the scientific advances unequally applied.

NOTE Confidence: 0.9685558

00:58:53.195 --> 00:58:54.555 I am well aware that

NOTE Confidence: 0.9685558

00:58:54.555 --> 00:58:56.474 commitment to democracy wasn't uniformly

NOTE Confidence: 0.9685558

00:58:56.474 --> 00:58:57.994 applied everywhere. But the idea

NOTE Confidence: 0.9685558

00:58:57.994 --> 00:58:59.355 starts and then begins to

NOTE Confidence: 0.9685558

00:58:59.355 --> 00:59:00.714 spread. And the steam engine

NOTE Confidence: 0.9685558

00:59:00.714 --> 00:59:02.259 is invented. And electricity is

NOTE Confidence: 0.9685558

00:59:02.259 --> 00:59:03.460 figured out, and magnetism is

NOTE Confidence: 0.9685558

00:59:03.460 --> 00:59:04.660 figured out, and these things

NOTE Confidence: 0.9685558

00:59:04.660 --> 00:59:06.259 begin to spread around the
NOTE Confidence: 0.9685558

00:59:06.259 --> 00:59:07.619 world. And Pinker and others
NOTE Confidence: 0.9685558

00:59:07.619 --> 00:59:09.059 have argued that it was
NOTE Confidence: 0.9685558

00:59:09.059 --> 00:59:11.319 these philosophical and scientific innovations
NOTE Confidence: 0.99739534

00:59:11.700 --> 00:59:13.220 that have led to tremendous
NOTE Confidence: 0.99739534

00:59:13.220 --> 00:59:14.759 improvements in the human condition
NOTE Confidence: 0.99739534

00:59:14.900 --> 00:59:16.019 in the last couple of
NOTE Confidence: 0.99739534

00:59:16.019 --> 00:59:18.295 hundred years. Life became longer,
NOTE Confidence: 0.99739534

00:59:18.515 --> 00:59:20.775 richer, freer, and more peaceful.
NOTE Confidence: 0.9873799

00:59:21.634 --> 00:59:23.234 But my argument is we
NOTE Confidence: 0.9873799

00:59:23.234 --> 00:59:24.535 do not have to rely
NOTE Confidence: 0.9873799

00:59:24.755 --> 00:59:26.595 solely on such recent historical
NOTE Confidence: 0.9873799

00:59:26.595 --> 00:59:28.035 developments to make the world
NOTE Confidence: 0.9873799

00:59:28.035 --> 00:59:28.535 better.
NOTE Confidence: 0.92355436

00:59:29.260 --> 00:59:30.220 As I've tried to show
NOTE Confidence: 0.92355436

00:59:30.220 --> 00:59:30.720 you,

NOTE Confidence: 0.9994129
00:59:31.100 --> 00:59:31.920 more ancient,
NOTE Confidence: 0.98467094
00:59:32.220 --> 00:59:34.300 more powerful, and deeper forces
NOTE Confidence: 0.98467094
00:59:34.300 --> 00:59:35.740 are at work propelling a
NOTE Confidence: 0.98467094
00:59:35.740 --> 00:59:36.480 good society.
NOTE Confidence: 0.99701935
00:59:36.940 --> 00:59:38.220 So in my view, the
NOTE Confidence: 0.99701935
00:59:38.220 --> 00:59:39.900 arc of evolutionary history is
NOTE Confidence: 0.99701935
00:59:39.900 --> 00:59:41.660 long, but it bends towards
NOTE Confidence: 0.99701935
00:59:41.660 --> 00:59:42.160 goodness.
NOTE Confidence: 0.9980798
00:59:43.020 --> 00:59:43.840 Thank you.
NOTE Confidence: 0.91952467
00:59:53.955 --> 00:59:54.915 Thank you so much. That
NOTE Confidence: 0.91952467
00:59:54.915 --> 00:59:55.875 that was, like, a a
NOTE Confidence: 0.91952467
00:59:55.875 --> 00:59:56.455 a masterwork,
NOTE Confidence: 0.9877081
00:59:57.155 --> 00:59:58.455 of a of a talk.
NOTE Confidence: 0.95735806
00:59:59.710 --> 01:00:00.990 Such a pleasure to to
NOTE Confidence: 0.95735806
01:00:00.990 --> 01:00:02.350 participate in that. I have
NOTE Confidence: 0.95735806

01:00:02.350 --> 01:00:03.070 a a lot of follow-up
NOTE Confidence: 0.95735806

01:00:03.070 --> 01:00:04.110 questions, but I I I
NOTE Confidence: 0.95735806

01:00:04.110 --> 01:00:05.310 don't want to be selfish,
NOTE Confidence: 0.95735806

01:00:05.310 --> 01:00:06.350 so I wanna turn to
NOTE Confidence: 0.95735806

01:00:06.350 --> 01:00:07.470 the audience. I just a
NOTE Confidence: 0.95735806

01:00:07.470 --> 01:00:08.530 couple of quick announcements.
NOTE Confidence: 0.9968861

01:00:08.830 --> 01:00:10.610 The the sign in for,
NOTE Confidence: 0.9813143

01:00:11.470 --> 01:00:12.370 ethics concentrators
NOTE Confidence: 0.9923991

01:00:12.670 --> 01:00:14.035 is over there, and the
NOTE Confidence: 0.9923991

01:00:14.035 --> 01:00:15.815 CME code is over here.
NOTE Confidence: 0.9892562

01:00:16.195 --> 01:00:17.235 And with that, I wanna
NOTE Confidence: 0.9892562

01:00:17.235 --> 01:00:18.935 open the floor up to,
NOTE Confidence: 0.98243123

01:00:19.795 --> 01:00:21.395 to to questions from the
NOTE Confidence: 0.98243123

01:00:21.395 --> 01:00:21.895 audience.
NOTE Confidence: 0.80981946

01:00:23.315 --> 01:00:24.195 First of all, thank you.
NOTE Confidence: 0.80981946

01:00:24.195 --> 01:00:25.555 We're we're we're we're Coming

NOTE Confidence: 0.80981946

01:00:25.555 --> 01:00:26.295 with the microphone.

NOTE Confidence: 0.9363069

01:00:30.100 --> 01:00:31.180 I'll not yell. I'll talk

NOTE Confidence: 0.9363069

01:00:31.180 --> 01:00:31.960 in the microphone.

NOTE Confidence: 0.9178567

01:00:32.580 --> 01:00:33.380 By the way, I like

NOTE Confidence: 0.9178567

01:00:33.540 --> 01:00:34.820 I find it I get

NOTE Confidence: 0.9178567

01:00:34.820 --> 01:00:36.340 so full of energy and

NOTE Confidence: 0.9178567

01:00:36.340 --> 01:00:37.720 as you can see, me,

NOTE Confidence: 0.94452316

01:00:38.180 --> 01:00:39.300 I I would I could

NOTE Confidence: 0.94452316

01:00:39.300 --> 01:00:40.260 have done this without a

NOTE Confidence: 0.94452316

01:00:40.260 --> 01:00:41.140 microphone. It would have been

NOTE Confidence: 0.94452316

01:00:41.140 --> 01:00:42.585 more comfortable actually without it,

NOTE Confidence: 0.94452316

01:00:42.585 --> 01:00:44.346 But yeah. Yeah. I don't

NOTE Confidence: 0.94452316

01:00:44.346 --> 01:00:45.603 mind you yelling is my

NOTE Confidence: 0.94452316

01:00:45.603 --> 01:00:46.861 point. Sweet. I would, but,

NOTE Confidence: 0.94452316

01:00:46.861 --> 01:00:48.119 you know, they love the

NOTE Confidence: 0.94452316

01:00:48.119 --> 01:00:49.377 microphone. We we get a
NOTE Confidence: 0.94452316

01:00:49.377 --> 01:00:50.635 lot of things if we
NOTE Confidence: 0.94452316

01:00:50.635 --> 01:00:51.892 don't use it because of
NOTE Confidence: 0.94452316

01:00:52.144 --> 01:00:53.402 Yeah. Then the people online
NOTE Confidence: 0.94452316

01:00:53.402 --> 01:00:54.660 can't hear it. For sure.
NOTE Confidence: 0.9704999

01:00:55.460 --> 01:00:56.260 I love I know. But
NOTE Confidence: 0.9704999

01:00:56.260 --> 01:00:57.059 the part of me that
NOTE Confidence: 0.9704999

01:00:57.059 --> 01:00:58.819 likes to disobey bureaucracy, the
NOTE Confidence: 0.9704999

01:00:58.819 --> 01:01:00.260 disobedient part of me, it's
NOTE Confidence: 0.9704999

01:01:00.260 --> 01:01:01.460 like resents that too. You
NOTE Confidence: 0.9704999

01:01:01.460 --> 01:01:02.420 know? I know I have
NOTE Confidence: 0.9704999

01:01:02.420 --> 01:01:03.140 to do it, and it's
NOTE Confidence: 0.9704999

01:01:03.140 --> 01:01:03.859 the right thing to do.
NOTE Confidence: 0.9704999

01:01:03.859 --> 01:01:04.819 It's also for people who
NOTE Confidence: 0.9704999

01:01:04.819 --> 01:01:05.940 are hard of hearing. Yes.
NOTE Confidence: 0.9704999

01:01:05.940 --> 01:01:07.215 You're right. I know. So

NOTE Confidence: 0.9704999
01:01:07.215 --> 01:01:08.735 that's actually a great segue
NOTE Confidence: 0.9704999
01:01:08.735 --> 01:01:10.095 into my question. Okay.
NOTE Confidence: 0.9874629
01:01:10.415 --> 01:01:11.455 So you talk about the
NOTE Confidence: 0.9874629
01:01:11.455 --> 01:01:12.655 theory of being able to
NOTE Confidence: 0.9874629
01:01:12.655 --> 01:01:13.695 have a level of a
NOTE Confidence: 0.9874629
01:01:13.695 --> 01:01:15.715 utopia due to social engineering.
NOTE Confidence: 0.9874629
01:01:15.775 --> 01:01:16.975 And when looking at the
NOTE Confidence: 0.9874629
01:01:16.975 --> 01:01:18.035 outcomes of your,
NOTE Confidence: 0.91441995
01:01:18.575 --> 01:01:19.475 as you described,
NOTE Confidence: 0.9898557
01:01:19.910 --> 01:01:21.430 stupid AI or just little
NOTE Confidence: 0.9898557
01:01:21.430 --> 01:01:23.350 robots making little differences that
NOTE Confidence: 0.9898557
01:01:23.350 --> 01:01:23.850 impact,
NOTE Confidence: 0.98238355
01:01:24.390 --> 01:01:26.470 human behavior, what's the what
NOTE Confidence: 0.98238355
01:01:26.470 --> 01:01:27.350 do you think is the
NOTE Confidence: 0.98238355
01:01:27.350 --> 01:01:28.410 realistic scalability
NOTE Confidence: 0.96815753

01:01:28.710 --> 01:01:30.230 of that impact, especially when
NOTE Confidence: 0.96815753

01:01:30.230 --> 01:01:32.090 you start running into auxiliary
NOTE Confidence: 0.96815753

01:01:32.230 --> 01:01:34.330 human behaviors like demand avoidance
NOTE Confidence: 0.96815753

01:01:34.475 --> 01:01:35.595 or wanting to stick it
NOTE Confidence: 0.96815753

01:01:35.595 --> 01:01:36.795 to the man or Yes.
NOTE Confidence: 0.96815753

01:01:36.875 --> 01:01:38.235 Any of those things. So
NOTE Confidence: 0.96815753

01:01:38.235 --> 01:01:38.795 first of all, I need
NOTE Confidence: 0.96815753

01:01:38.795 --> 01:01:39.595 to be very clear that
NOTE Confidence: 0.96815753

01:01:39.595 --> 01:01:40.555 I I am not engaged
NOTE Confidence: 0.96815753

01:01:40.555 --> 01:01:41.935 in a utopian project.
NOTE Confidence: 0.9595734

01:01:42.715 --> 01:01:43.675 I am not I in
NOTE Confidence: 0.9595734

01:01:43.675 --> 01:01:44.555 fact, I have I'm very
NOTE Confidence: 0.9595734

01:01:44.555 --> 01:01:46.255 skeptical of efforts to create
NOTE Confidence: 0.96770805

01:01:46.635 --> 01:01:48.075 utopias. I what I'm arguing
NOTE Confidence: 0.96770805

01:01:48.075 --> 01:01:48.875 is is that within us,
NOTE Confidence: 0.96770805

01:01:48.875 --> 01:01:50.010 we already have the capacity

NOTE Confidence: 0.96770805

01:01:50.010 --> 01:01:50.890 for a certain kind of

NOTE Confidence: 0.96770805

01:01:50.890 --> 01:01:52.250 utopia. And really what we

NOTE Confidence: 0.96770805

01:01:52.250 --> 01:01:52.810 need to do is get

NOTE Confidence: 0.96770805

01:01:52.810 --> 01:01:54.010 out of the way. So

NOTE Confidence: 0.96770805

01:01:54.010 --> 01:01:55.050 typically, what you find with

NOTE Confidence: 0.96770805

01:01:55.050 --> 01:01:56.910 the with the totalitarian regimes

NOTE Confidence: 0.996308

01:01:57.290 --> 01:01:59.130 is, you find efforts that

NOTE Confidence: 0.996308

01:01:59.130 --> 01:02:00.030 attempt to

NOTE Confidence: 0.95991087

01:02:00.330 --> 01:02:01.770 suppress the social suite almost

NOTE Confidence: 0.95991087

01:02:01.770 --> 01:02:03.615 inevitably fail. So for example,

NOTE Confidence: 0.95991087

01:02:03.615 --> 01:02:05.055 in Kibbutzas, they all started

NOTE Confidence: 0.95991087

01:02:05.055 --> 01:02:07.555 with, this incredible communitarian ethos

NOTE Confidence: 0.95991087

01:02:07.695 --> 01:02:09.375 and, collective child rearing. Collective

NOTE Confidence: 0.95991087

01:02:09.375 --> 01:02:10.175 child rearing, by the way,

NOTE Confidence: 0.95991087

01:02:10.175 --> 01:02:10.975 is a very old idea.

NOTE Confidence: 0.95991087

01:02:10.975 --> 01:02:11.935 Plato talks about it in
NOTE Confidence: 0.95991087

01:02:11.935 --> 01:02:13.215 the republic. It goes way,
NOTE Confidence: 0.95991087

01:02:13.215 --> 01:02:14.335 way back. Every time it's
NOTE Confidence: 0.95991087

01:02:14.335 --> 01:02:15.330 been tried, it doesn't work.
NOTE Confidence: 0.95991087

01:02:15.490 --> 01:02:17.250 You can't make parents not
NOTE Confidence: 0.95991087

01:02:17.250 --> 01:02:18.130 want to be with their
NOTE Confidence: 0.95991087

01:02:18.130 --> 01:02:19.910 children, maybe for one generation.
NOTE Confidence: 0.95991087

01:02:20.050 --> 01:02:20.930 But by the second or
NOTE Confidence: 0.95991087

01:02:20.930 --> 01:02:22.550 third generation, it goes back.
NOTE Confidence: 0.9926906

01:02:23.010 --> 01:02:23.970 Or if you look at
NOTE Confidence: 0.9926906

01:02:23.970 --> 01:02:24.770 how many,
NOTE Confidence: 0.9687127

01:02:26.210 --> 01:02:27.410 the the the the communes
NOTE Confidence: 0.9687127

01:02:27.410 --> 01:02:28.610 that tried to cope with
NOTE Confidence: 0.9687127

01:02:28.610 --> 01:02:30.290 marital love or or sexual
NOTE Confidence: 0.9687127

01:02:30.290 --> 01:02:31.885 love, romantic love, And they
NOTE Confidence: 0.9687127

01:02:31.885 --> 01:02:33.325 they actually had paradoxically two

NOTE Confidence: 0.9687127

01:02:33.325 --> 01:02:34.845 different ways because they want

NOTE Confidence: 0.9687127

01:02:34.845 --> 01:02:35.885 you to feel devoted to

NOTE Confidence: 0.9687127

01:02:35.885 --> 01:02:37.005 the group, and they want

NOTE Confidence: 0.9687127

01:02:37.005 --> 01:02:38.125 you to feel devoted to

NOTE Confidence: 0.9687127

01:02:38.125 --> 01:02:39.405 dear leader. They don't want

NOTE Confidence: 0.9687127

01:02:39.405 --> 01:02:40.605 you to feel devoted to

NOTE Confidence: 0.9687127

01:02:40.605 --> 01:02:41.725 a particular person within the

NOTE Confidence: 0.9687127

01:02:41.725 --> 01:02:43.005 group. So they either go

NOTE Confidence: 0.9687127

01:02:43.005 --> 01:02:44.205 the polyamory route that say

NOTE Confidence: 0.9687127

01:02:44.205 --> 01:02:45.165 everyone can have sex with

NOTE Confidence: 0.9687127

01:02:45.165 --> 01:02:46.350 everyone else, or they go

NOTE Confidence: 0.9687127

01:02:46.350 --> 01:02:47.390 the shaker route and say

NOTE Confidence: 0.9687127

01:02:47.390 --> 01:02:48.030 no one can have sex

NOTE Confidence: 0.9687127

01:02:48.030 --> 01:02:49.150 with anyone else. Both of

NOTE Confidence: 0.9687127

01:02:49.150 --> 01:02:51.150 those eventually fail. Because people,

NOTE Confidence: 0.9687127

01:02:51.150 --> 01:02:52.190 they they want to have
NOTE Confidence: 0.9687127

01:02:52.190 --> 01:02:53.310 a romantic attachment to a
NOTE Confidence: 0.9687127

01:02:53.310 --> 01:02:54.270 particular person. It's part of
NOTE Confidence: 0.9687127

01:02:54.270 --> 01:02:55.150 our it's like it's like
NOTE Confidence: 0.9687127

01:02:55.150 --> 01:02:56.510 your pancreas wants to produce
NOTE Confidence: 0.9687127

01:02:56.510 --> 01:02:57.630 insulin. It can't help but
NOTE Confidence: 0.9687127

01:02:57.630 --> 01:02:59.285 produce insulin. You can't help
NOTE Confidence: 0.9687127

01:02:59.285 --> 01:03:00.165 but love the person that
NOTE Confidence: 0.9687127

01:03:00.165 --> 01:03:01.125 you're having sex with, it
NOTE Confidence: 0.9687127

01:03:01.125 --> 01:03:02.725 turns out, or befriending them.
NOTE Confidence: 0.9687127

01:03:02.725 --> 01:03:03.845 Or like the Stasi that
NOTE Confidence: 0.9687127

01:03:03.845 --> 01:03:05.605 tried to suppress friendship in
NOTE Confidence: 0.9687127

01:03:05.605 --> 01:03:06.805 in their society by having
NOTE Confidence: 0.9687127

01:03:06.805 --> 01:03:08.245 everyone be suspicious of everyone
NOTE Confidence: 0.9687127

01:03:08.245 --> 01:03:09.625 else. Yes. With a tremendous
NOTE Confidence: 0.9687127

01:03:09.765 --> 01:03:11.685 cultural pressure, you can suppress

NOTE Confidence: 0.9687127
01:03:11.685 --> 01:03:13.100 some of these desires
NOTE Confidence: 0.96597344
01:03:13.480 --> 01:03:14.920 for a while, a generation
NOTE Confidence: 0.96597344
01:03:14.920 --> 01:03:16.040 or two, but eventually, they
NOTE Confidence: 0.96597344
01:03:16.040 --> 01:03:17.240 come back. So I what
NOTE Confidence: 0.96597344
01:03:17.240 --> 01:03:18.200 I'm trying to argue is
NOTE Confidence: 0.96597344
01:03:18.200 --> 01:03:18.840 is that we have the
NOTE Confidence: 0.96597344
01:03:18.840 --> 01:03:20.540 seeds of utopia within us.
NOTE Confidence: 0.96597344
01:03:20.600 --> 01:03:21.880 We and what we really
NOTE Confidence: 0.96597344
01:03:21.880 --> 01:03:22.840 need to do is either
NOTE Confidence: 0.96597344
01:03:22.840 --> 01:03:23.560 get out of the way
NOTE Confidence: 0.96597344
01:03:23.560 --> 01:03:25.105 or gently support it. So
NOTE Confidence: 0.96597344
01:03:25.105 --> 01:03:26.545 the AI coming back back
NOTE Confidence: 0.96597344
01:03:26.545 --> 01:03:27.345 now, I hope, to what
NOTE Confidence: 0.96597344
01:03:27.345 --> 01:03:28.805 I've understood is your question.
NOTE Confidence: 0.9932436
01:03:29.825 --> 01:03:31.345 My argument is just that
NOTE Confidence: 0.9932436

01:03:31.345 --> 01:03:33.185 these AIs that we invent
NOTE Confidence: 0.9932436

01:03:33.185 --> 01:03:34.165 or that we're developing,
NOTE Confidence: 0.9918708

01:03:34.785 --> 01:03:35.905 if we are to avoid
NOTE Confidence: 0.9918708

01:03:35.905 --> 01:03:37.205 them leading to a dystopian
NOTE Confidence: 0.9918708

01:03:37.345 --> 01:03:37.740 future,
NOTE Confidence: 0.9990011

01:03:38.300 --> 01:03:39.260 must be designed in a
NOTE Confidence: 0.9990011

01:03:39.260 --> 01:03:40.380 way that is sensitive to
NOTE Confidence: 0.9990011

01:03:40.380 --> 01:03:41.500 the arguments I've been making
NOTE Confidence: 0.9990011

01:03:41.500 --> 01:03:43.180 here today. Otherwise, they will
NOTE Confidence: 0.9990011

01:03:43.180 --> 01:03:44.400 lead us to to misery.
NOTE Confidence: 0.99843395

01:03:45.020 --> 01:03:45.980 So they they need to
NOTE Confidence: 0.99843395

01:03:46.060 --> 01:03:47.420 these these forms of AI
NOTE Confidence: 0.99843395

01:03:47.420 --> 01:03:48.220 need to be designed in
NOTE Confidence: 0.99843395

01:03:48.220 --> 01:03:49.280 a way that is respectful
NOTE Confidence: 0.96481997

01:03:49.660 --> 01:03:50.940 of our innate tendencies. So
NOTE Confidence: 0.96481997

01:03:50.940 --> 01:03:52.060 it's a little bit like

NOTE Confidence: 0.96481997
01:03:52.060 --> 01:03:53.545 changing your diet to, you
NOTE Confidence: 0.96481997
01:03:53.545 --> 01:03:54.425 know, like, you you can't
NOTE Confidence: 0.96481997
01:03:54.425 --> 01:03:55.385 eat, like, the diet of
NOTE Confidence: 0.96481997
01:03:55.385 --> 01:03:56.585 a pal. Right? Like, if
NOTE Confidence: 0.96481997
01:03:56.585 --> 01:03:57.625 I change your diet to
NOTE Confidence: 0.96481997
01:03:57.625 --> 01:03:58.845 only have roughage,
NOTE Confidence: 0.9581857
01:03:59.145 --> 01:04:00.585 you would die. You know,
NOTE Confidence: 0.9581857
01:04:00.585 --> 01:04:02.025 I you you you you're
NOTE Confidence: 0.9581857
01:04:02.025 --> 01:04:02.985 adapted to a certain kind
NOTE Confidence: 0.9581857
01:04:02.985 --> 01:04:04.345 of environment, and and that's
NOTE Confidence: 0.9581857
01:04:04.345 --> 01:04:05.225 the kind of argument I'm
NOTE Confidence: 0.9581857
01:04:05.225 --> 01:04:06.105 making. Now did I answer
NOTE Confidence: 0.9581857
01:04:06.105 --> 01:04:06.905 your question? I'm not sure
NOTE Confidence: 0.9581857
01:04:06.905 --> 01:04:07.565 I did.
NOTE Confidence: 0.98992544
01:04:07.880 --> 01:04:10.200 Halfway. Okay. Yes. Go back
NOTE Confidence: 0.98992544

01:04:10.200 --> 01:04:11.020 to yeah.
NOTE Confidence: 0.933398

01:04:11.320 --> 01:04:12.360 Go back just a little
NOTE Confidence: 0.933398

01:04:12.360 --> 01:04:12.860 bit.
NOTE Confidence: 0.95250666

01:04:13.560 --> 01:04:15.160 Yes. Halfway. Sorry for taking
NOTE Confidence: 0.95250666

01:04:15.160 --> 01:04:16.520 up so much detail. But,
NOTE Confidence: 0.95250666

01:04:16.680 --> 01:04:17.640 then the second half of
NOTE Confidence: 0.95250666

01:04:17.640 --> 01:04:19.000 it is with that said,
NOTE Confidence: 0.95250666

01:04:19.000 --> 01:04:19.740 to what
NOTE Confidence: 0.9914374

01:04:20.115 --> 01:04:20.995 level would that be able
NOTE Confidence: 0.9914374

01:04:20.995 --> 01:04:22.275 to be scaled to a
NOTE Confidence: 0.9914374

01:04:22.275 --> 01:04:23.475 systemic level? Would it have
NOTE Confidence: 0.9914374

01:04:23.475 --> 01:04:25.075 to be different pockets of
NOTE Confidence: 0.9914374

01:04:25.075 --> 01:04:26.935 individuals using these things?
NOTE Confidence: 0.93442667

01:04:27.795 --> 01:04:28.675 And, yeah, again, with the
NOTE Confidence: 0.93442667

01:04:28.675 --> 01:04:30.195 human behavior such as demand
NOTE Confidence: 0.93442667

01:04:30.195 --> 01:04:30.695 avoidance,

NOTE Confidence: 0.94850135
01:04:31.155 --> 01:04:32.215 that is there,
NOTE Confidence: 0.99743664
01:04:32.550 --> 01:04:34.230 like Yeah. I think I
NOTE Confidence: 0.99743664
01:04:34.230 --> 01:04:35.690 think these things are scalable.
NOTE Confidence: 0.9608558
01:04:37.030 --> 01:04:38.230 I'm very wary of making
NOTE Confidence: 0.9608558
01:04:38.230 --> 01:04:39.910 predictions about AI because I
NOTE Confidence: 0.9608558
01:04:39.910 --> 01:04:41.050 keep thinking of Reptevia
NOTE Confidence: 0.97092474
01:04:41.510 --> 01:04:43.110 in the, in the middle
NOTE Confidence: 0.97092474
01:04:43.110 --> 01:04:44.470 of the town square of
NOTE Confidence: 0.97092474
01:04:44.470 --> 01:04:44.970 Anatevka
NOTE Confidence: 0.8801554
01:04:45.670 --> 01:04:45.910 when,
NOTE Confidence: 0.9621813
01:04:46.710 --> 01:04:48.170 when there's this big argument.
NOTE Confidence: 0.9621813
01:04:48.435 --> 01:04:50.015 And a set of people
NOTE Confidence: 0.9621813
01:04:50.035 --> 01:04:51.155 make one point and Rep
NOTE Confidence: 0.9621813
01:04:51.155 --> 01:04:52.915 Tevye says, you're right. Yeah.
NOTE Confidence: 0.9621813
01:04:52.915 --> 01:04:53.955 And then someone makes the
NOTE Confidence: 0.9621813

01:04:53.955 --> 01:04:55.155 opposite argument and he says,
NOTE Confidence: 0.9621813

01:04:55.155 --> 01:04:56.195 you're right too. And then
NOTE Confidence: 0.9621813

01:04:56.195 --> 01:04:57.075 the third person says, Rep
NOTE Confidence: 0.9621813

01:04:57.075 --> 01:04:57.955 Tevye, they can't both be
NOTE Confidence: 0.9621813

01:04:57.955 --> 01:04:58.835 right. And he goes, you're
NOTE Confidence: 0.9621813

01:04:58.835 --> 01:04:59.655 also right.
NOTE Confidence: 0.98262227

01:04:59.955 --> 01:05:00.900 And this is how I
NOTE Confidence: 0.98262227

01:05:00.900 --> 01:05:02.339 feel when I I listen
NOTE Confidence: 0.98262227

01:05:02.339 --> 01:05:03.700 to people more expert than
NOTE Confidence: 0.98262227

01:05:03.700 --> 01:05:05.059 me in artificial intelligence. So
NOTE Confidence: 0.98262227

01:05:05.059 --> 01:05:05.940 I go to these conferences
NOTE Confidence: 0.98262227

01:05:05.940 --> 01:05:07.059 and I listen to these
NOTE Confidence: 0.98262227

01:05:07.059 --> 01:05:08.740 these computer scientists and tech
NOTE Confidence: 0.98262227

01:05:08.740 --> 01:05:10.500 billionaires, and they think AI
NOTE Confidence: 0.98262227

01:05:10.500 --> 01:05:12.180 is gonna bring forth the
NOTE Confidence: 0.98262227

01:05:12.180 --> 01:05:13.619 greatest, you know, realization of

NOTE Confidence: 0.98262227
01:05:13.619 --> 01:05:14.119 human,
NOTE Confidence: 0.9438945
01:05:14.815 --> 01:05:16.655 flourishing that is imaginable in
NOTE Confidence: 0.9438945
01:05:16.655 --> 01:05:18.655 a great futuristic world. And
NOTE Confidence: 0.9438945
01:05:18.655 --> 01:05:19.695 I'm like, I I can
NOTE Confidence: 0.9438945
01:05:19.695 --> 01:05:20.655 see that. And then I
NOTE Confidence: 0.9438945
01:05:20.655 --> 01:05:21.535 go to some another one,
NOTE Confidence: 0.9438945
01:05:21.535 --> 01:05:22.415 and they say, no. This
NOTE Confidence: 0.9438945
01:05:22.415 --> 01:05:23.375 is a complete disaster. I
NOTE Confidence: 0.9438945
01:05:23.375 --> 01:05:24.335 went to a conference where
NOTE Confidence: 0.9438945
01:05:24.335 --> 01:05:26.035 Sam Altman said very nonchalantly
NOTE Confidence: 0.99204123
01:05:26.415 --> 01:05:27.295 that there was a two
NOTE Confidence: 0.99204123
01:05:27.295 --> 01:05:29.235 percent extinction risk from AI.
NOTE Confidence: 0.9588336
01:05:29.680 --> 01:05:30.800 And I'm like, woah. You
NOTE Confidence: 0.9588336
01:05:30.800 --> 01:05:32.160 know? That's you know? I'm
NOTE Confidence: 0.9588336
01:05:32.160 --> 01:05:33.760 very worried about that. You're
NOTE Confidence: 0.9588336

01:05:33.760 --> 01:05:34.580 right too.
NOTE Confidence: 0.97754526

01:05:34.880 --> 01:05:35.840 But they can't both be
NOTE Confidence: 0.97754526

01:05:35.840 --> 01:05:36.960 right. So I have stopped.
NOTE Confidence: 0.97754526

01:05:36.960 --> 01:05:38.080 I'm gonna avoid your question
NOTE Confidence: 0.97754526

01:05:38.080 --> 01:05:39.120 by saying I I don't
NOTE Confidence: 0.97754526

01:05:39.120 --> 01:05:40.340 have a fixed idea
NOTE Confidence: 0.8608178

01:05:40.720 --> 01:05:41.220 about,
NOTE Confidence: 0.95363384

01:05:41.600 --> 01:05:43.120 they are scalable. Yes. They
NOTE Confidence: 0.95363384

01:05:43.120 --> 01:05:43.780 are scalable.
NOTE Confidence: 0.97368854

01:05:44.295 --> 01:05:45.494 But I don't know whether
NOTE Confidence: 0.97368854

01:05:45.494 --> 01:05:46.454 they will in fact scale
NOTE Confidence: 0.97368854

01:05:46.454 --> 01:05:47.335 in a way that's good
NOTE Confidence: 0.97368854

01:05:47.335 --> 01:05:48.295 or bad for us. And
NOTE Confidence: 0.97368854

01:05:48.295 --> 01:05:49.415 I'm not prepared yet to
NOTE Confidence: 0.97368854

01:05:49.415 --> 01:05:50.155 make a prediction.
NOTE Confidence: 0.92416924

01:05:51.015 --> 01:05:51.815 And that but they will

NOTE Confidence: 0.92416924
01:05:51.815 --> 01:05:52.694 be both good to be
NOTE Confidence: 0.92416924
01:05:52.694 --> 01:05:53.815 clear. They will be both
NOTE Confidence: 0.92416924
01:05:53.815 --> 01:05:54.694 good and bad things that
NOTE Confidence: 0.92416924
01:05:54.694 --> 01:05:56.214 happen whether the good outweighs
NOTE Confidence: 0.92416924
01:05:56.214 --> 01:05:57.255 the bad. I'm not yet
NOTE Confidence: 0.92416924
01:05:57.255 --> 01:05:58.635 willing or able to predict.
NOTE Confidence: 0.57645416
01:06:01.500 --> 01:06:02.000 Question.
NOTE Confidence: 0.8601631
01:06:02.940 --> 01:06:04.000 I guess a question
NOTE Confidence: 0.9594439
01:06:04.380 --> 01:06:05.680 just in trying to understand
NOTE Confidence: 0.9764217
01:06:06.140 --> 01:06:07.260 fully the argument you're trying
NOTE Confidence: 0.9764217
01:06:07.260 --> 01:06:08.940 to make, initially, it sounded
NOTE Confidence: 0.9764217
01:06:08.940 --> 01:06:09.740 like you were trying to
NOTE Confidence: 0.9764217
01:06:09.740 --> 01:06:10.940 argue something about how, like,
NOTE Confidence: 0.9764217
01:06:10.940 --> 01:06:11.440 evolutionarily,
NOTE Confidence: 0.978685
01:06:12.300 --> 01:06:14.385 genetically, we've sort of are
NOTE Confidence: 0.978685

01:06:14.385 --> 01:06:15.585 predisposed to some of these
NOTE Confidence: 0.978685

01:06:15.585 --> 01:06:17.285 good natured ways of acting.
NOTE Confidence: 0.99110746

01:06:17.745 --> 01:06:18.545 And then you were also
NOTE Confidence: 0.99110746

01:06:18.545 --> 01:06:19.665 describing all these ways in
NOTE Confidence: 0.99110746

01:06:19.665 --> 01:06:20.565 which almost
NOTE Confidence: 0.9541209

01:06:21.185 --> 01:06:22.945 those impulses are fragile, like,
NOTE Confidence: 0.9541209

01:06:22.945 --> 01:06:24.625 they're dependent on the collection
NOTE Confidence: 0.9541209

01:06:24.625 --> 01:06:26.225 of networks. And, you know,
NOTE Confidence: 0.9541209

01:06:26.225 --> 01:06:27.105 if things are arranged this
NOTE Confidence: 0.9541209

01:06:27.105 --> 01:06:28.065 way or that way, it
NOTE Confidence: 0.9541209

01:06:28.065 --> 01:06:29.445 can be drastically different.
NOTE Confidence: 0.97757035

01:06:29.745 --> 01:06:30.450 And I'm just trying to
NOTE Confidence: 0.97757035

01:06:30.450 --> 01:06:31.410 square those two in my
NOTE Confidence: 0.97757035

01:06:31.410 --> 01:06:32.390 head. Like, are we
NOTE Confidence: 0.9703369

01:06:32.770 --> 01:06:34.770 evolving genetically towards the good
NOTE Confidence: 0.9703369

01:06:34.770 --> 01:06:35.730 societies, or is it we're

NOTE Confidence: 0.9703369

01:06:35.730 --> 01:06:37.890 evolving culturally through these kinds

NOTE Confidence: 0.9703369

01:06:37.890 --> 01:06:39.010 of No. Mostly, I would

NOTE Confidence: 0.9703369

01:06:39.010 --> 01:06:40.369 argue there are definitely cultural

NOTE Confidence: 0.9703369

01:06:40.369 --> 01:06:41.570 things that are happening. Culture

NOTE Confidence: 0.9703369

01:06:41.570 --> 01:06:42.849 is hugely important to human

NOTE Confidence: 0.9703369

01:06:42.849 --> 01:06:43.890 affairs. I don't want anyone

NOTE Confidence: 0.9703369

01:06:43.890 --> 01:06:44.849 to misunderstand. I'm not a

NOTE Confidence: 0.9703369

01:06:44.849 --> 01:06:46.425 genetic determinist. I'm not saying

NOTE Confidence: 0.9703369

01:06:46.425 --> 01:06:48.425 that only only genes matter.

NOTE Confidence: 0.9703369

01:06:48.425 --> 01:06:49.545 It's not what I'm saying.

NOTE Confidence: 0.9703369

01:06:49.545 --> 01:06:50.505 I am saying, however, that

NOTE Confidence: 0.9703369

01:06:50.505 --> 01:06:51.705 underneath the culture, under the

NOTE Confidence: 0.9703369

01:06:51.705 --> 01:06:53.225 veneer of culture, there's a

NOTE Confidence: 0.9703369

01:06:53.225 --> 01:06:54.685 foundation of genetic

NOTE Confidence: 0.96788204

01:06:55.225 --> 01:06:57.405 determinism or or genetic structuring

NOTE Confidence: 0.96788204

01:06:57.625 --> 01:06:58.925 of human social interactions.
NOTE Confidence: 0.99107045

01:06:59.225 --> 01:07:00.650 They can be sensitive. So
NOTE Confidence: 0.99107045

01:07:00.650 --> 01:07:01.850 just like your body, you
NOTE Confidence: 0.99107045

01:07:01.850 --> 01:07:02.570 know, if I put you
NOTE Confidence: 0.99107045

01:07:02.570 --> 01:07:03.390 in a famine,
NOTE Confidence: 0.9858164

01:07:03.690 --> 01:07:05.130 your body will be changed.
NOTE Confidence: 0.9858164

01:07:05.130 --> 01:07:06.170 Your growth will be stunted.
NOTE Confidence: 0.9858164

01:07:06.170 --> 01:07:07.210 You had a natural tendency
NOTE Confidence: 0.9858164

01:07:07.210 --> 01:07:08.010 to grow up and be
NOTE Confidence: 0.9858164

01:07:08.010 --> 01:07:09.290 five foot ten and have
NOTE Confidence: 0.9858164

01:07:09.290 --> 01:07:11.130 a functioning kidneys and functioning
NOTE Confidence: 0.9858164

01:07:11.130 --> 01:07:12.730 pancreas, but you're in the
NOTE Confidence: 0.9858164

01:07:12.730 --> 01:07:13.230 Amsterdam,
NOTE Confidence: 0.9849387

01:07:14.385 --> 01:07:15.505 famine during the second World
NOTE Confidence: 0.9849387

01:07:15.505 --> 01:07:16.785 War and your growth and
NOTE Confidence: 0.9849387

01:07:16.785 --> 01:07:18.625 reproduction is stunted. We wouldn't

NOTE Confidence: 0.9849387

01:07:18.625 --> 01:07:19.825 say that was your natural

NOTE Confidence: 0.9849387

01:07:19.825 --> 01:07:20.945 body. Right? We wouldn't say

NOTE Confidence: 0.9849387

01:07:20.945 --> 01:07:21.905 that's what you were fated

NOTE Confidence: 0.9849387

01:07:21.905 --> 01:07:22.705 to do. We would say

NOTE Confidence: 0.9849387

01:07:22.705 --> 01:07:23.825 that the environment in which

NOTE Confidence: 0.9849387

01:07:23.825 --> 01:07:25.445 you grew up has redirected

NOTE Confidence: 0.9849387

01:07:25.505 --> 01:07:26.705 you, deformed you, moved you

NOTE Confidence: 0.9849387

01:07:26.705 --> 01:07:28.145 away from what you otherwise

NOTE Confidence: 0.9849387

01:07:28.145 --> 01:07:29.440 would have made. So I

NOTE Confidence: 0.9849387

01:07:29.440 --> 01:07:31.140 acknowledge and say, for example,

NOTE Confidence: 0.9849387

01:07:31.280 --> 01:07:32.740 most of my arguments about

NOTE Confidence: 0.9849387

01:07:32.960 --> 01:07:34.800 the natural order of natural

NOTE Confidence: 0.9849387

01:07:34.800 --> 01:07:37.360 social order assumes plentiful resources

NOTE Confidence: 0.9849387

01:07:37.360 --> 01:07:38.880 or adequate resources to support

NOTE Confidence: 0.9849387

01:07:38.880 --> 01:07:39.460 the population.

NOTE Confidence: 0.99820733

01:07:39.760 --> 01:07:40.560 If you take a group
NOTE Confidence: 0.99820733

01:07:40.560 --> 01:07:41.760 of people and put them
NOTE Confidence: 0.99820733

01:07:41.760 --> 01:07:42.855 in a place where there's
NOTE Confidence: 0.99820733

01:07:42.855 --> 01:07:43.895 just no food at all
NOTE Confidence: 0.99820733

01:07:43.895 --> 01:07:45.015 for all of them, well,
NOTE Confidence: 0.99820733

01:07:45.015 --> 01:07:46.055 they're gonna fall upon each
NOTE Confidence: 0.99820733

01:07:46.055 --> 01:07:47.355 other and be less able
NOTE Confidence: 0.99820733

01:07:47.415 --> 01:07:48.855 than if you arranged it
NOTE Confidence: 0.99820733

01:07:48.855 --> 01:07:50.055 so that they weren't as
NOTE Confidence: 0.99820733

01:07:50.055 --> 01:07:50.555 constrained.
NOTE Confidence: 0.9949385

01:07:51.095 --> 01:07:52.375 So I'm not saying that
NOTE Confidence: 0.9949385

01:07:52.375 --> 01:07:53.735 the environment plays no role.
NOTE Confidence: 0.9949385

01:07:53.735 --> 01:07:54.695 I am saying, however, we
NOTE Confidence: 0.9949385

01:07:54.695 --> 01:07:55.915 have these natural predilections
NOTE Confidence: 0.9987927

01:07:56.640 --> 01:07:57.920 and, which we need to
NOTE Confidence: 0.9987927

01:07:57.920 --> 01:07:59.599 support and and nourish. Did

NOTE Confidence: 0.9987927
01:07:59.599 --> 01:08:00.579 I answer your question?
NOTE Confidence: 0.92654544
01:08:01.200 --> 01:08:02.339 I can see you're skeptical
NOTE Confidence: 0.9274585
01:08:02.640 --> 01:08:04.420 even with my difficult vision.
NOTE Confidence: 0.9274585
01:08:04.640 --> 01:08:05.599 Yeah. I think you've answered
NOTE Confidence: 0.9274585
01:08:05.599 --> 01:08:06.900 it sufficiently. Yeah.
NOTE Confidence: 0.9645632
01:08:10.575 --> 01:08:12.915 Hi. Here. Hi. Yes. Yep.
NOTE Confidence: 0.9645632
01:08:13.135 --> 01:08:14.255 Hi. Thank you so much
NOTE Confidence: 0.9645632
01:08:14.255 --> 01:08:15.795 for your for your talk.
NOTE Confidence: 0.9459544
01:08:16.575 --> 01:08:17.955 I wanted to ask you,
NOTE Confidence: 0.9459544
01:08:18.255 --> 01:08:20.435 what's your definition of goodness
NOTE Confidence: 0.9459544
01:08:20.495 --> 01:08:21.935 and Yes. And if you
NOTE Confidence: 0.9459544
01:08:21.935 --> 01:08:23.555 think that's a universal,
NOTE Confidence: 0.9688627
01:08:24.000 --> 01:08:24.500 thing
NOTE Confidence: 0.8996076
01:08:25.040 --> 01:08:26.479 or or not, this is
NOTE Confidence: 0.8996076
01:08:26.479 --> 01:08:27.760 my question, my first question.
NOTE Confidence: 0.8996076

01:08:27.760 --> 01:08:29.060 And then the second question

NOTE Confidence: 0.9799691

01:08:29.600 --> 01:08:31.700 is, relative to the attributes

NOTE Confidence: 0.9799691

01:08:31.760 --> 01:08:32.420 of friendship

NOTE Confidence: 0.8973466

01:08:32.960 --> 01:08:34.240 and if based on your

NOTE Confidence: 0.8973466

01:08:34.240 --> 01:08:35.700 research you found,

NOTE Confidence: 0.93964165

01:08:37.655 --> 01:08:39.415 like, what basically, how do

NOTE Confidence: 0.93964165

01:08:39.415 --> 01:08:40.235 they change

NOTE Confidence: 0.90595233

01:08:42.135 --> 01:08:43.915 based on, like, same sex

NOTE Confidence: 0.9930248

01:08:44.215 --> 01:08:44.715 friendship

NOTE Confidence: 0.957005

01:08:45.255 --> 01:08:46.875 and opposite sex friendship?

NOTE Confidence: 0.9748701

01:08:48.455 --> 01:08:49.175 So first of all, I'm

NOTE Confidence: 0.9748701

01:08:49.175 --> 01:08:50.295 gonna go take a tangent

NOTE Confidence: 0.9748701

01:08:50.295 --> 01:08:51.255 and tell you there was

NOTE Confidence: 0.9748701

01:08:51.255 --> 01:08:51.570 a

NOTE Confidence: 0.8836888

01:08:52.449 --> 01:08:53.729 a political commentator, a right

NOTE Confidence: 0.8836888

01:08:53.729 --> 01:08:54.790 wing political commentator

NOTE Confidence: 0.9025033
01:08:55.170 --> 01:08:56.689 called Bill Safire that used
NOTE Confidence: 0.9025033
01:08:56.689 --> 01:08:57.270 to publish,
NOTE Confidence: 0.9302631
01:08:57.810 --> 01:08:58.849 I didn't agree with his
NOTE Confidence: 0.9302631
01:08:58.849 --> 01:09:00.210 politics particularly though he was
NOTE Confidence: 0.9302631
01:09:00.210 --> 01:09:01.110 a smart man.
NOTE Confidence: 0.9583592
01:09:01.810 --> 01:09:02.849 But the last page of
NOTE Confidence: 0.9583592
01:09:02.849 --> 01:09:04.050 the New York Times Magazine
NOTE Confidence: 0.9583592
01:09:04.050 --> 01:09:04.689 used to have a very,
NOTE Confidence: 0.9583592
01:09:04.689 --> 01:09:05.650 you know, on language, he
NOTE Confidence: 0.9583592
01:09:05.650 --> 01:09:06.869 wrote this very nice column.
NOTE Confidence: 0.9583592
01:09:07.055 --> 01:09:08.095 And Bill Safire, as he
NOTE Confidence: 0.9583592
01:09:08.095 --> 01:09:08.755 got older,
NOTE Confidence: 0.9584914
01:09:09.615 --> 01:09:11.375 developed this heuristic for dealing
NOTE Confidence: 0.9584914
01:09:11.375 --> 01:09:12.655 with complicated questions he got
NOTE Confidence: 0.9584914
01:09:12.655 --> 01:09:13.395 from audiences.
NOTE Confidence: 0.95871574

01:09:13.695 --> 01:09:14.655 Because what he found was
NOTE Confidence: 0.95871574

01:09:14.655 --> 01:09:16.015 that people would ask, professors,
NOTE Confidence: 0.95871574

01:09:16.015 --> 01:09:17.135 you know, mister Safire have
NOTE Confidence: 0.95871574

01:09:17.135 --> 01:09:19.055 three three part question, and
NOTE Confidence: 0.95871574

01:09:19.055 --> 01:09:19.854 and there would be three
NOTE Confidence: 0.95871574

01:09:19.854 --> 01:09:20.655 parts. And then he would
NOTE Confidence: 0.95871574

01:09:20.655 --> 01:09:21.535 answer the first part and
NOTE Confidence: 0.95871574

01:09:21.535 --> 01:09:22.660 answer the second part, and
NOTE Confidence: 0.95871574

01:09:22.660 --> 01:09:23.620 then he would forget the
NOTE Confidence: 0.95871574

01:09:23.620 --> 01:09:25.060 third part. And so he
NOTE Confidence: 0.95871574

01:09:25.060 --> 01:09:27.140 developed Bill Safire's floating third
NOTE Confidence: 0.95871574

01:09:27.140 --> 01:09:28.340 point, which was a universal
NOTE Confidence: 0.95871574

01:09:28.340 --> 01:09:29.220 answer you could give to
NOTE Confidence: 0.95871574

01:09:29.220 --> 01:09:30.820 any third question, which is
NOTE Confidence: 0.95871574

01:09:30.820 --> 01:09:31.780 that there are no easy
NOTE Confidence: 0.95871574

01:09:31.780 --> 01:09:32.280 answers.

NOTE Confidence: 0.96082574

01:09:32.979 --> 01:09:34.420 So, actually, if you go

NOTE Confidence: 0.96082574

01:09:34.420 --> 01:09:35.640 back and look at Safire,

NOTE Confidence: 0.96082574

01:09:35.765 --> 01:09:36.645 he does this a lot.

NOTE Confidence: 0.96082574

01:09:36.645 --> 01:09:37.445 You know? You'll see an

NOTE Confidence: 0.96082574

01:09:37.445 --> 01:09:38.165 interview with him, and then

NOTE Confidence: 0.96082574

01:09:38.165 --> 01:09:39.045 you'll get the and from

NOTE Confidence: 0.96082574

01:09:39.045 --> 01:09:39.765 the third one, there are

NOTE Confidence: 0.96082574

01:09:39.765 --> 01:09:41.205 no easy answers. Anyway, you

NOTE Confidence: 0.96082574

01:09:41.205 --> 01:09:42.085 stopped short of the third

NOTE Confidence: 0.96082574

01:09:42.085 --> 01:09:42.725 one, so I was so

NOTE Confidence: 0.96082574

01:09:42.725 --> 01:09:43.765 glad I didn't have to

NOTE Confidence: 0.96082574

01:09:43.765 --> 01:09:45.285 use Bill Sapphire's. And I

NOTE Confidence: 0.96082574

01:09:45.285 --> 01:09:46.245 think I can remember the

NOTE Confidence: 0.96082574

01:09:46.245 --> 01:09:46.965 first two questions. So the

NOTE Confidence: 0.96082574

01:09:46.965 --> 01:09:47.845 first question had to do

NOTE Confidence: 0.96082574

01:09:47.845 --> 01:09:48.645 with how do you define
NOTE Confidence: 0.96082574

01:09:48.645 --> 01:09:49.865 goodness? So
NOTE Confidence: 0.95716417

01:09:50.490 --> 01:09:52.090 so, actually, here, I rely
NOTE Confidence: 0.95716417

01:09:52.090 --> 01:09:53.290 on a bit of, post
NOTE Confidence: 0.95716417

01:09:53.290 --> 01:09:54.810 second World War moral philosophy
NOTE Confidence: 0.95716417

01:09:54.810 --> 01:09:55.770 by Philippa Foote. Do you
NOTE Confidence: 0.95716417

01:09:55.770 --> 01:09:57.450 guys know Philippa Foote? She's
NOTE Confidence: 0.95716417

01:09:57.450 --> 01:09:59.229 a genius. I mean, she
NOTE Confidence: 0.95716417

01:09:59.370 --> 01:10:00.590 is just unbelievable.
NOTE Confidence: 0.9761097

01:10:01.130 --> 01:10:02.170 So she has a very
NOTE Confidence: 0.9761097

01:10:02.170 --> 01:10:04.030 famous, book on moral philosophy,
NOTE Confidence: 0.9683069

01:10:04.804 --> 01:10:05.925 and I'm I'm blocking on
NOTE Confidence: 0.9683069

01:10:05.925 --> 01:10:06.645 the title of the book
NOTE Confidence: 0.9683069

01:10:06.645 --> 01:10:07.685 right now. But it has
NOTE Confidence: 0.9683069

01:10:07.925 --> 01:10:08.725 you know how the you
NOTE Confidence: 0.9683069

01:10:08.725 --> 01:10:09.764 know how the first line

NOTE Confidence: 0.9683069
01:10:09.764 --> 01:10:11.465 of, hundred years of solitude
NOTE Confidence: 0.966373
01:10:11.844 --> 01:10:13.125 is many years later when
NOTE Confidence: 0.966373
01:10:13.125 --> 01:10:14.324 he was facing the firing
NOTE Confidence: 0.966373
01:10:14.324 --> 01:10:16.405 squad, Juan Remedios remembered the
NOTE Confidence: 0.966373
01:10:16.405 --> 01:10:17.844 day his father took him
NOTE Confidence: 0.966373
01:10:17.844 --> 01:10:19.284 to discover ice. Like, I
NOTE Confidence: 0.966373
01:10:19.284 --> 01:10:20.520 think the best first sentence
NOTE Confidence: 0.966373
01:10:20.520 --> 01:10:22.060 of any novel ever written.
NOTE Confidence: 0.9485756
01:10:22.760 --> 01:10:24.600 Philip O'Foot has the best
NOTE Confidence: 0.9485756
01:10:24.600 --> 01:10:26.040 first sentence of any philosophical
NOTE Confidence: 0.9485756
01:10:26.040 --> 01:10:27.320 book I've ever read. And
NOTE Confidence: 0.9485756
01:10:27.320 --> 01:10:29.240 the the sentence is, in
NOTE Confidence: 0.9485756
01:10:29.240 --> 01:10:31.320 moral philosophy, I think it
NOTE Confidence: 0.9485756
01:10:31.320 --> 01:10:32.680 is helpful to think about
NOTE Confidence: 0.9485756
01:10:32.680 --> 01:10:33.180 plants.
NOTE Confidence: 0.9499193

01:10:34.285 --> 01:10:35.485 Like, what the hell is
NOTE Confidence: 0.9499193

01:10:35.485 --> 01:10:37.085 this woman talking about? You
NOTE Confidence: 0.9499193

01:10:37.085 --> 01:10:37.725 know, I open a book
NOTE Confidence: 0.9499193

01:10:37.725 --> 01:10:38.685 of moral philosophy, and that's
NOTE Confidence: 0.9499193

01:10:38.685 --> 01:10:39.725 the first sentence. And what
NOTE Confidence: 0.9499193

01:10:39.725 --> 01:10:40.765 she argues in that book
NOTE Confidence: 0.9499193

01:10:40.765 --> 01:10:41.905 is that you can make
NOTE Confidence: 0.9499193

01:10:41.965 --> 01:10:43.165 the the the the dilemma
NOTE Confidence: 0.9499193

01:10:43.165 --> 01:10:44.945 that the moral philosophers faced
NOTE Confidence: 0.9499193

01:10:45.005 --> 01:10:46.285 after the second World War
NOTE Confidence: 0.9499193

01:10:46.285 --> 01:10:47.265 given the holocaust
NOTE Confidence: 0.9615175

01:10:47.700 --> 01:10:48.820 is how can you explain
NOTE Confidence: 0.9615175

01:10:48.820 --> 01:10:50.100 or justify the existence of
NOTE Confidence: 0.9615175

01:10:50.100 --> 01:10:51.140 any kind of morality in
NOTE Confidence: 0.9615175

01:10:51.140 --> 01:10:52.020 human beings? Is it all
NOTE Confidence: 0.9615175

01:10:52.020 --> 01:10:53.219 just might makes right? How

NOTE Confidence: 0.9615175
01:10:53.219 --> 01:10:54.200 do you get to foundational
NOTE Confidence: 0.9615175
01:10:54.260 --> 01:10:54.760 morality?
NOTE Confidence: 0.98387194
01:10:55.380 --> 01:10:56.739 And Foote's answer to the
NOTE Confidence: 0.98387194
01:10:56.739 --> 01:10:58.100 question is that you can
NOTE Confidence: 0.98387194
01:10:58.100 --> 01:10:59.380 get to the foundation of
NOTE Confidence: 0.98387194
01:10:59.380 --> 01:11:00.120 a morality
NOTE Confidence: 0.9752549
01:11:00.784 --> 01:11:02.625 by arguing that things are
NOTE Confidence: 0.9752549
01:11:02.625 --> 01:11:03.905 moral to the extent in
NOTE Confidence: 0.9752549
01:11:03.905 --> 01:11:05.585 which they allow the thing
NOTE Confidence: 0.9752549
01:11:05.585 --> 01:11:07.425 to comport with its its
NOTE Confidence: 0.9752549
01:11:07.425 --> 01:11:09.104 essence. So for example, she
NOTE Confidence: 0.9752549
01:11:09.104 --> 01:11:10.465 she asked the question, what
NOTE Confidence: 0.9752549
01:11:10.465 --> 01:11:11.764 do we what do we
NOTE Confidence: 0.9752549
01:11:11.824 --> 01:11:12.864 say when we mean that
NOTE Confidence: 0.9752549
01:11:12.864 --> 01:11:14.405 this plant has good roots?
NOTE Confidence: 0.9455463

01:11:15.560 --> 01:11:17.020 We mean that these roots
NOTE Confidence: 0.9455463

01:11:17.080 --> 01:11:18.780 allow the plants to thrive.
NOTE Confidence: 0.9559728

01:11:19.320 --> 01:11:20.840 Or what do we mean
NOTE Confidence: 0.9559728

01:11:20.840 --> 01:11:22.360 when we say a plant
NOTE Confidence: 0.9559728

01:11:22.520 --> 01:11:23.400 a a clock is a
NOTE Confidence: 0.9559728

01:11:23.400 --> 01:11:24.140 good clock?
NOTE Confidence: 0.9468302

01:11:24.680 --> 01:11:25.960 We mean that this clock
NOTE Confidence: 0.9468302

01:11:25.960 --> 01:11:27.015 tells time properly.
NOTE Confidence: 0.96165216

01:11:27.495 --> 01:11:28.535 That the clock is a
NOTE Confidence: 0.96165216

01:11:28.535 --> 01:11:29.515 good clock insofar
NOTE Confidence: 0.99221784

01:11:30.055 --> 01:11:31.415 as it can function as
NOTE Confidence: 0.99221784

01:11:31.415 --> 01:11:32.775 a clock. This is sort
NOTE Confidence: 0.99221784

01:11:32.775 --> 01:11:34.075 of her argument. I'm summarizing
NOTE Confidence: 0.99221784

01:11:34.135 --> 01:11:34.635 it.
NOTE Confidence: 0.9780479

01:11:35.335 --> 01:11:36.295 And so this is my
NOTE Confidence: 0.9780479

01:11:36.295 --> 01:11:37.895 solution to the problem when

NOTE Confidence: 0.9780479

01:11:37.895 --> 01:11:38.695 I get to the last

NOTE Confidence: 0.9780479

01:11:38.695 --> 01:11:40.055 chapter of the book, is

NOTE Confidence: 0.9780479

01:11:40.055 --> 01:11:40.770 to say that

NOTE Confidence: 0.9908313

01:11:41.410 --> 01:11:42.930 a good society is one

NOTE Confidence: 0.9908313

01:11:42.930 --> 01:11:44.850 which is endowed with qualities

NOTE Confidence: 0.9908313

01:11:44.850 --> 01:11:45.890 that allow it to be

NOTE Confidence: 0.9908313

01:11:45.890 --> 01:11:47.250 a society, that allow it

NOTE Confidence: 0.9908313

01:11:47.250 --> 01:11:48.530 to thrive. It's not I

NOTE Confidence: 0.9908313

01:11:48.530 --> 01:11:49.330 don't just rely on the

NOTE Confidence: 0.9908313

01:11:49.330 --> 01:11:50.050 fact that all of us

NOTE Confidence: 0.9908313

01:11:50.050 --> 01:11:51.090 would probably agree that love

NOTE Confidence: 0.9908313

01:11:51.090 --> 01:11:52.530 and friendship and cooperation are

NOTE Confidence: 0.9908313

01:11:52.530 --> 01:11:53.490 good things. That'd be a

NOTE Confidence: 0.9908313

01:11:53.490 --> 01:11:54.930 little bit too expedient. But

NOTE Confidence: 0.9908313

01:11:54.930 --> 01:11:56.070 those things are required

NOTE Confidence: 0.98072785

01:11:56.495 --> 01:11:57.135 for us to be a
NOTE Confidence: 0.98072785

01:11:57.135 --> 01:11:58.655 social animal. We we couldn't
NOTE Confidence: 0.98072785

01:11:58.655 --> 01:11:59.854 even be social. We couldn't
NOTE Confidence: 0.98072785

01:11:59.854 --> 01:12:01.215 live as social animals if
NOTE Confidence: 0.98072785

01:12:01.215 --> 01:12:02.515 we didn't have those qualities.
NOTE Confidence: 0.98072785

01:12:02.814 --> 01:12:04.255 So that's my answer, I
NOTE Confidence: 0.98072785

01:12:04.255 --> 01:12:05.875 think, to your first question.
NOTE Confidence: 0.98072785

01:12:06.015 --> 01:12:07.135 Your second question had to
NOTE Confidence: 0.98072785

01:12:07.135 --> 01:12:08.095 do with same sex and
NOTE Confidence: 0.98072785

01:12:08.095 --> 01:12:09.075 discordant sex,
NOTE Confidence: 0.8197576

01:12:09.455 --> 01:12:09.955 friendships.
NOTE Confidence: 0.98525107

01:12:10.700 --> 01:12:11.580 Now we've looked at this
NOTE Confidence: 0.98525107

01:12:11.580 --> 01:12:12.540 a little bit in our
NOTE Confidence: 0.98525107

01:12:12.540 --> 01:12:13.580 network. So, for example, if
NOTE Confidence: 0.98525107

01:12:13.580 --> 01:12:14.540 you map the social networks
NOTE Confidence: 0.98525107

01:12:14.540 --> 01:12:15.520 in Saudi Arabia,

NOTE Confidence: 0.9610681

01:12:15.820 --> 01:12:18.060 you find, very few opposite

NOTE Confidence: 0.9610681

01:12:18.060 --> 01:12:19.120 sex friendships

NOTE Confidence: 0.96175486

01:12:20.220 --> 01:12:21.580 because of the cultural overlay.

NOTE Confidence: 0.96175486

01:12:21.580 --> 01:12:22.620 I don't think that's natural,

NOTE Confidence: 0.96175486

01:12:22.620 --> 01:12:23.235 by the way. I think

NOTE Confidence: 0.96175486

01:12:23.235 --> 01:12:25.655 humans naturally and certainly chimpanzees

NOTE Confidence: 0.96175486

01:12:25.795 --> 01:12:27.235 and other primates will have

NOTE Confidence: 0.96175486

01:12:27.235 --> 01:12:27.735 cross,

NOTE Confidence: 0.991099

01:12:28.115 --> 01:12:28.615 sex,

NOTE Confidence: 0.98107016

01:12:29.075 --> 01:12:29.575 friendships.

NOTE Confidence: 0.9603524

01:12:30.595 --> 01:12:31.875 And I have many, one

NOTE Confidence: 0.9603524

01:12:31.875 --> 01:12:33.395 of my best female friends

NOTE Confidence: 0.9603524

01:12:33.395 --> 01:12:34.195 is in the audience right

NOTE Confidence: 0.9603524

01:12:34.195 --> 01:12:34.915 now as it turns out.

NOTE Confidence: 0.9603524

01:12:34.915 --> 01:12:35.635 She I talk to her

NOTE Confidence: 0.9603524

01:12:35.635 --> 01:12:36.510 every week and, you know,
NOTE Confidence: 0.9603524

01:12:36.590 --> 01:12:37.489 she's a great friendship.
NOTE Confidence: 0.96977586

01:12:39.309 --> 01:12:40.750 So I certainly have, most
NOTE Confidence: 0.96977586

01:12:40.750 --> 01:12:42.429 of us have discordant, gender
NOTE Confidence: 0.96977586

01:12:42.429 --> 01:12:43.550 friendships. And so far as
NOTE Confidence: 0.96977586

01:12:43.550 --> 01:12:44.369 we can tell,
NOTE Confidence: 0.9914376

01:12:44.670 --> 01:12:45.789 in the societies in which
NOTE Confidence: 0.9914376

01:12:45.789 --> 01:12:47.229 this is permitted, there's not
NOTE Confidence: 0.9914376

01:12:47.229 --> 01:12:48.590 a lot of difference in
NOTE Confidence: 0.9914376

01:12:48.590 --> 01:12:50.050 terms of the the
NOTE Confidence: 0.9683569

01:12:50.465 --> 01:12:51.664 the high level stuff. Now
NOTE Confidence: 0.9683569

01:12:51.664 --> 01:12:52.864 the the content of the
NOTE Confidence: 0.9683569

01:12:52.864 --> 01:12:53.824 interactions may be a little
NOTE Confidence: 0.9683569

01:12:53.824 --> 01:12:54.945 different. I get something different
NOTE Confidence: 0.9683569

01:12:54.945 --> 01:12:55.905 from my male friends and
NOTE Confidence: 0.9683569

01:12:55.905 --> 01:12:57.425 my female friends. I behave

NOTE Confidence: 0.9683569

01:12:57.425 --> 01:12:58.804 more stereotypically male.

NOTE Confidence: 0.9817066

01:12:59.104 --> 01:13:00.405 Actually, I behave more stereotypically

NOTE Confidence: 0.9817066

01:13:00.465 --> 01:13:01.664 male in both ways. With

NOTE Confidence: 0.9817066

01:13:01.664 --> 01:13:02.625 my male friends, I'm more

NOTE Confidence: 0.9817066

01:13:02.625 --> 01:13:03.364 like a

NOTE Confidence: 0.935008

01:13:03.900 --> 01:13:05.420 like a wonky guy. And

NOTE Confidence: 0.935008

01:13:05.420 --> 01:13:06.300 with my female friends, I'm

NOTE Confidence: 0.935008

01:13:06.300 --> 01:13:07.100 like, you know, a more

NOTE Confidence: 0.935008

01:13:07.100 --> 01:13:08.620 vulnerable guy. Whatever. But, you

NOTE Confidence: 0.935008

01:13:08.620 --> 01:13:09.120 know,

NOTE Confidence: 0.9632839

01:13:09.979 --> 01:13:11.020 there are some differences in

NOTE Confidence: 0.9632839

01:13:11.020 --> 01:13:11.820 how we interact. But the

NOTE Confidence: 0.9632839

01:13:11.820 --> 01:13:12.780 fun but at the high

NOTE Confidence: 0.9632839

01:13:12.780 --> 01:13:13.820 level, the existence of the

NOTE Confidence: 0.9632839

01:13:13.820 --> 01:13:15.420 friendships, the main attributes of

NOTE Confidence: 0.9632839

01:13:15.420 --> 01:13:16.780 the friendships, mutual support, and
NOTE Confidence: 0.9632839

01:13:16.780 --> 01:13:18.525 so on, and this mathematical
NOTE Confidence: 0.9632839

01:13:18.664 --> 01:13:19.625 structure of the networks is
NOTE Confidence: 0.9632839

01:13:19.625 --> 01:13:20.425 not different so far as
NOTE Confidence: 0.9632839

01:13:20.425 --> 01:13:21.465 we can see. Did I
NOTE Confidence: 0.9632839

01:13:21.465 --> 01:13:22.744 answer your second question too?
NOTE Confidence: 0.9632839

01:13:22.744 --> 01:13:23.564 Yeah. Good.
NOTE Confidence: 0.9831747

01:13:24.344 --> 01:13:25.324 Question here.
NOTE Confidence: 0.94100636

01:13:26.744 --> 01:13:27.945 I think the book is
NOTE Confidence: 0.94100636

01:13:27.945 --> 01:13:29.385 Natural Goodness. I'm sorry. I
NOTE Confidence: 0.94100636

01:13:29.385 --> 01:13:30.204 can't hear you.
NOTE Confidence: 0.93941045

01:13:30.744 --> 01:13:31.960 What is You'll have to
NOTE Confidence: 0.93941045

01:13:31.960 --> 01:13:32.840 yell. I think the book
NOTE Confidence: 0.93941045

01:13:32.840 --> 01:13:34.360 is Natural Goodness by foot.
NOTE Confidence: 0.93941045

01:13:34.360 --> 01:13:35.820 It's natural what? Goodness.
NOTE Confidence: 0.9751297

01:13:36.520 --> 01:13:37.800 Natural Goodness. Yeah. Originally, the

NOTE Confidence: 0.9751297
01:13:37.800 --> 01:13:38.600 title of the book was
NOTE Confidence: 0.9751297
01:13:38.600 --> 01:13:39.740 Natural Born Friends.
NOTE Confidence: 0.9804446
01:13:40.200 --> 01:13:41.400 We saw Natural Born Killers,
NOTE Confidence: 0.9804446
01:13:41.400 --> 01:13:42.200 and we thought, oh, that's
NOTE Confidence: 0.9804446
01:13:42.200 --> 01:13:42.939 a great title.
NOTE Confidence: 0.9329837
01:13:43.320 --> 01:13:44.360 Then we thought, no. No.
NOTE Confidence: 0.9329837
01:13:44.360 --> 01:13:45.400 That's not where we wanna
NOTE Confidence: 0.9329837
01:13:45.400 --> 01:13:46.595 go. Yeah.
NOTE Confidence: 0.97369915
01:13:46.975 --> 01:13:47.695 But, yeah, thank you for
NOTE Confidence: 0.97369915
01:13:47.695 --> 01:13:48.255 the talk.
NOTE Confidence: 0.9922718
01:13:48.735 --> 01:13:50.435 My question just relates to
NOTE Confidence: 0.9887252
01:13:50.814 --> 01:13:51.875 it feels like through
NOTE Confidence: 0.96873164
01:13:53.695 --> 01:13:54.655 through the entirety of the
NOTE Confidence: 0.96873164
01:13:54.655 --> 01:13:56.835 talk, you endorse a version
NOTE Confidence: 0.96873164
01:13:56.895 --> 01:13:57.395 of
NOTE Confidence: 0.9989586

01:13:57.775 --> 01:13:58.755 social behavior
NOTE Confidence: 0.9660462

01:13:59.360 --> 01:14:01.460 that is very engineering oriented,
NOTE Confidence: 0.99872494

01:14:02.320 --> 01:14:03.380 that these are
NOTE Confidence: 0.97326005

01:14:04.000 --> 01:14:05.360 networks and connections that are,
NOTE Confidence: 0.97326005

01:14:05.360 --> 01:14:06.479 like, edges on a graph
NOTE Confidence: 0.97326005

01:14:06.479 --> 01:14:07.619 that have been exquisitely
NOTE Confidence: 0.9165941

01:14:07.920 --> 01:14:08.420 arranged.
NOTE Confidence: 0.97019017

01:14:10.159 --> 01:14:11.360 As someone who comes from
NOTE Confidence: 0.97019017

01:14:11.360 --> 01:14:12.479 a different school of thought,
NOTE Confidence: 0.97019017

01:14:12.479 --> 01:14:13.679 I'm curious, are there examples
NOTE Confidence: 0.97019017

01:14:13.679 --> 01:14:14.955 in your research where
NOTE Confidence: 0.98814946

01:14:15.435 --> 01:14:17.515 social and cultural conditions actually
NOTE Confidence: 0.98814946

01:14:17.515 --> 01:14:18.015 overdetermine
NOTE Confidence: 0.9657631

01:14:18.555 --> 01:14:21.195 or sublimate these biological drives
NOTE Confidence: 0.9657631

01:14:21.195 --> 01:14:22.395 that you were talking about?
NOTE Confidence: 0.9657631

01:14:22.395 --> 01:14:23.835 Yeah. So first of all,

NOTE Confidence: 0.9657631

01:14:23.835 --> 01:14:25.035 my you're right. I'm making

NOTE Confidence: 0.9657631

01:14:25.035 --> 01:14:27.115 an analogy between kidneys around

NOTE Confidence: 0.9657631

01:14:27.115 --> 01:14:28.155 the world work the same

NOTE Confidence: 0.9657631

01:14:28.155 --> 01:14:30.290 way, and and muscles around

NOTE Confidence: 0.9657631

01:14:30.290 --> 01:14:31.250 the world work the same

NOTE Confidence: 0.9657631

01:14:31.250 --> 01:14:31.750 way

NOTE Confidence: 0.71630347

01:14:32.050 --> 01:14:32.690 and and,

NOTE Confidence: 0.9391095

01:14:34.050 --> 01:14:35.730 and brains have very similar

NOTE Confidence: 0.9391095

01:14:36.210 --> 01:14:37.430 have worked the same way.

NOTE Confidence: 0.92666495

01:14:37.730 --> 01:14:39.090 And and I'm argument is

NOTE Confidence: 0.92666495

01:14:39.090 --> 01:14:40.130 that there are certain aspects

NOTE Confidence: 0.92666495

01:14:40.130 --> 01:14:41.090 of society which work the

NOTE Confidence: 0.92666495

01:14:41.090 --> 01:14:41.925 same way everywhere in

NOTE Confidence: 0.9768902

01:14:43.925 --> 01:14:43.955 the world. That's correct. By

NOTE Confidence: 0.9768902

01:14:43.955 --> 01:14:43.986 the way, this is an

NOTE Confidence: 0.9768902

01:14:43.986 --> 01:14:44.965 old project in anthropology of
NOTE Confidence: 0.9768902

01:14:44.965 --> 01:14:46.585 trying to define cultural universals,
NOTE Confidence: 0.9768902

01:14:46.804 --> 01:14:47.684 but they approach it from
NOTE Confidence: 0.9768902

01:14:47.684 --> 01:14:48.485 a very different point of
NOTE Confidence: 0.9768902

01:14:48.485 --> 01:14:49.045 view. They say, you know,
NOTE Confidence: 0.9768902

01:14:49.045 --> 01:14:50.485 every society has forms of
NOTE Confidence: 0.9768902

01:14:50.485 --> 01:14:52.564 adornment, and every society has,
NOTE Confidence: 0.9768902

01:14:52.564 --> 01:14:54.370 you know, sporting events. But
NOTE Confidence: 0.9768902

01:14:54.370 --> 01:14:55.170 I'm not so interested in
NOTE Confidence: 0.9768902

01:14:55.170 --> 01:14:56.210 those things because those aren't
NOTE Confidence: 0.9768902

01:14:56.210 --> 01:14:57.170 encoded in our genes. You
NOTE Confidence: 0.9768902

01:14:57.170 --> 01:14:58.210 know, whether you play, you
NOTE Confidence: 0.9768902

01:14:58.210 --> 01:14:59.570 know, soccer or cricket is
NOTE Confidence: 0.9768902

01:14:59.570 --> 01:15:01.190 not something that's genetically determined.
NOTE Confidence: 0.9768902

01:15:01.490 --> 01:15:01.990 So
NOTE Confidence: 0.9897968

01:15:02.530 --> 01:15:03.650 so I I'm very careful

NOTE Confidence: 0.9897968

01:15:03.650 --> 01:15:04.690 to define, like, what is

NOTE Confidence: 0.9897968

01:15:04.690 --> 01:15:05.985 my scope of interest.

NOTE Confidence: 0.970639

01:15:06.465 --> 01:15:07.505 It's absolutely the case that

NOTE Confidence: 0.970639

01:15:07.505 --> 01:15:08.784 culture plays an important role

NOTE Confidence: 0.970639

01:15:08.784 --> 01:15:09.665 in shaping some of these

NOTE Confidence: 0.970639

01:15:09.665 --> 01:15:11.185 things. So, for example, like,

NOTE Confidence: 0.970639

01:15:11.185 --> 01:15:12.145 we just gave the Saudi

NOTE Confidence: 0.970639

01:15:12.145 --> 01:15:13.585 Arabia example, whether it's deemed

NOTE Confidence: 0.970639

01:15:13.585 --> 01:15:14.085 permissible

NOTE Confidence: 0.9753659

01:15:14.465 --> 01:15:15.985 to have cross sex friendships,

NOTE Confidence: 0.9753659

01:15:15.985 --> 01:15:17.505 for example, is a cultural

NOTE Confidence: 0.9753659

01:15:17.505 --> 01:15:18.784 overlay. But it is that.

NOTE Confidence: 0.9753659

01:15:18.784 --> 01:15:19.685 It's an overlay.

NOTE Confidence: 0.9805411

01:15:20.070 --> 01:15:21.110 I'm trying to get beneath

NOTE Confidence: 0.9805411

01:15:21.110 --> 01:15:22.889 the surface. So, you know,

NOTE Confidence: 0.9805411

01:15:23.030 --> 01:15:25.110 even though the, even though
NOTE Confidence: 0.9805411

01:15:25.110 --> 01:15:26.949 the the, the genes expressed
NOTE Confidence: 0.9805411

01:15:26.949 --> 01:15:28.469 in a vegetarian society might
NOTE Confidence: 0.9805411

01:15:28.469 --> 01:15:29.429 be very different than the
NOTE Confidence: 0.9805411

01:15:29.429 --> 01:15:31.050 genes expressed in an omnivorous
NOTE Confidence: 0.9805411

01:15:31.110 --> 01:15:32.469 society, even given the same
NOTE Confidence: 0.9805411

01:15:32.469 --> 01:15:33.210 gene pool,
NOTE Confidence: 0.82193404

01:15:33.575 --> 01:15:34.635 but just different expression,
NOTE Confidence: 0.96465087

01:15:35.095 --> 01:15:36.455 the fundamental genes are the
NOTE Confidence: 0.96465087

01:15:36.455 --> 01:15:37.895 same. So that's sort of
NOTE Confidence: 0.96465087

01:15:37.895 --> 01:15:39.095 where what I'm after. I'm
NOTE Confidence: 0.96465087

01:15:39.095 --> 01:15:40.295 not negating culture. Like, one
NOTE Confidence: 0.96465087

01:15:40.295 --> 01:15:41.255 of the metaphors I use
NOTE Confidence: 0.96465087

01:15:41.255 --> 01:15:42.395 in the book is that
NOTE Confidence: 0.9671128

01:15:43.495 --> 01:15:44.935 in some ways, I think
NOTE Confidence: 0.9671128

01:15:44.935 --> 01:15:46.170 my project in this book

NOTE Confidence: 0.9671128

01:15:46.410 --> 01:15:47.949 is a very happy project

NOTE Confidence: 0.9671128

01:15:48.170 --> 01:15:49.210 because I think we're so

NOTE Confidence: 0.9671128

01:15:49.210 --> 01:15:50.969 focused on human difference that

NOTE Confidence: 0.9671128

01:15:50.969 --> 01:15:52.650 we forget human commonality and

NOTE Confidence: 0.9671128

01:15:52.650 --> 01:15:54.010 our common humanity. You know,

NOTE Confidence: 0.9671128

01:15:54.010 --> 01:15:55.050 we we it's like we're

NOTE Confidence: 0.9671128

01:15:55.050 --> 01:15:56.010 up on a high mountain

NOTE Confidence: 0.9671128

01:15:56.010 --> 01:15:57.370 plateau and we see that

NOTE Confidence: 0.9671128

01:15:57.370 --> 01:15:58.090 there are hills that are

NOTE Confidence: 0.9671128

01:15:58.090 --> 01:15:59.210 three hundred feet high and

NOTE Confidence: 0.9671128

01:15:59.210 --> 01:16:00.445 nine hundred feet high. We

NOTE Confidence: 0.9671128

01:16:00.445 --> 01:16:01.245 say, oh my god, that

NOTE Confidence: 0.9671128

01:16:01.245 --> 01:16:02.205 hill is three times the

NOTE Confidence: 0.9671128

01:16:02.205 --> 01:16:03.485 size of this hill. But

NOTE Confidence: 0.9671128

01:16:03.485 --> 01:16:04.205 if we step back from

NOTE Confidence: 0.9671128

01:16:04.205 --> 01:16:05.165 the plateau, we see that
NOTE Confidence: 0.9671128

01:16:05.165 --> 01:16:05.965 this is a mountain that's
NOTE Confidence: 0.9671128

01:16:05.965 --> 01:16:07.405 ten thousand three hundred feet
NOTE Confidence: 0.9671128

01:16:07.405 --> 01:16:08.445 and that's a mountain that's
NOTE Confidence: 0.9671128

01:16:08.445 --> 01:16:09.965 ten thousand nine hundred feet.
NOTE Confidence: 0.9671128

01:16:09.965 --> 01:16:11.085 Actually, they're not so different
NOTE Confidence: 0.9671128

01:16:11.085 --> 01:16:12.365 at all. It's just that
NOTE Confidence: 0.9671128

01:16:12.365 --> 01:16:13.405 we are focusing on the
NOTE Confidence: 0.9671128

01:16:13.405 --> 01:16:15.005 superficial differences right on the
NOTE Confidence: 0.9671128

01:16:15.005 --> 01:16:15.505 surface,
NOTE Confidence: 0.9553792

01:16:16.000 --> 01:16:18.479 losing a deeper vision into
NOTE Confidence: 0.9553792

01:16:18.479 --> 01:16:20.000 our universal capacity for love
NOTE Confidence: 0.9553792

01:16:20.000 --> 01:16:21.280 and friendship and cooperation and
NOTE Confidence: 0.9553792

01:16:21.280 --> 01:16:22.080 all these nice things I
NOTE Confidence: 0.9553792

01:16:22.080 --> 01:16:23.520 told you about. Which if
NOTE Confidence: 0.9553792

01:16:23.520 --> 01:16:25.520 we do, because in some

NOTE Confidence: 0.9553792
01:16:25.520 --> 01:16:27.360 sense, my scientific project is
NOTE Confidence: 0.9553792
01:16:27.360 --> 01:16:28.660 connected to a certain ideological
NOTE Confidence: 0.9553792
01:16:28.960 --> 01:16:30.320 project, which is I want
NOTE Confidence: 0.9553792
01:16:30.320 --> 01:16:32.055 us to feel connected to
NOTE Confidence: 0.9553792
01:16:32.055 --> 01:16:33.095 the whole of humanity. I
NOTE Confidence: 0.9553792
01:16:33.095 --> 01:16:34.854 want us to to feel
NOTE Confidence: 0.9553792
01:16:34.854 --> 01:16:36.555 like that our common humanity
NOTE Confidence: 0.9553792
01:16:36.615 --> 01:16:38.215 is shared and valuable and
NOTE Confidence: 0.9553792
01:16:38.215 --> 01:16:39.035 work preserving,
NOTE Confidence: 0.9557684
01:16:39.815 --> 01:16:41.095 but I'm trying to get
NOTE Confidence: 0.9557684
01:16:41.095 --> 01:16:42.375 to that. I I won't
NOTE Confidence: 0.9557684
01:16:42.375 --> 01:16:43.655 say my primary objective is
NOTE Confidence: 0.9557684
01:16:43.655 --> 01:16:45.390 ideological. It's not, but I'm
NOTE Confidence: 0.9557684
01:16:45.390 --> 01:16:46.750 aware of what I regard
NOTE Confidence: 0.9557684
01:16:46.750 --> 01:16:47.890 to be the good ideological
NOTE Confidence: 0.9557684

01:16:48.110 --> 01:16:48.610 implications
NOTE Confidence: 0.9607621

01:16:49.070 --> 01:16:50.430 of what is fundamentally for
NOTE Confidence: 0.9607621

01:16:50.430 --> 01:16:51.950 me a scientific project, which
NOTE Confidence: 0.9607621

01:16:51.950 --> 01:16:53.950 is understanding social order. And
NOTE Confidence: 0.9607621

01:16:53.950 --> 01:16:55.070 I think I think we're
NOTE Confidence: 0.9607621

01:16:55.070 --> 01:16:56.670 a magnificent species actually. I
NOTE Confidence: 0.9607621

01:16:56.670 --> 01:16:57.729 I think it's just incredible,
NOTE Confidence: 0.9180554

01:16:58.270 --> 01:16:59.550 like, how we are. I
NOTE Confidence: 0.9180554

01:16:59.550 --> 01:17:00.705 I I'm deeply impressed
NOTE Confidence: 0.8691731

01:17:01.905 --> 01:17:03.064 impressed with our,
NOTE Confidence: 0.92052776

01:17:03.725 --> 01:17:04.705 species. And, you know, I
NOTE Confidence: 0.92052776

01:17:04.785 --> 01:17:05.445 and I'm
NOTE Confidence: 0.96434766

01:17:06.145 --> 01:17:07.985 despite all of the evils
NOTE Confidence: 0.96434766

01:17:07.985 --> 01:17:09.185 in our history and the
NOTE Confidence: 0.96434766

01:17:09.185 --> 01:17:10.465 challenges in the world today,
NOTE Confidence: 0.96434766

01:17:10.465 --> 01:17:12.485 I remain optimistic about ourselves.

NOTE Confidence: 0.96434766
01:17:12.625 --> 01:17:13.985 Anyway, that's a long winded
NOTE Confidence: 0.96434766
01:17:13.985 --> 01:17:15.729 answer. Culture is important. I
NOTE Confidence: 0.96434766
01:17:15.729 --> 01:17:16.770 don't mean to negate it,
NOTE Confidence: 0.96434766
01:17:16.770 --> 01:17:17.969 but I'm interested in studying
NOTE Confidence: 0.96434766
01:17:17.969 --> 01:17:19.250 something different, which is below
NOTE Confidence: 0.96434766
01:17:19.250 --> 01:17:20.610 culture. And I acknowledge that
NOTE Confidence: 0.96434766
01:17:20.610 --> 01:17:22.050 culture can reshape some of
NOTE Confidence: 0.96434766
01:17:22.050 --> 01:17:23.189 these things, but not,
NOTE Confidence: 0.9647433
01:17:23.889 --> 01:17:24.770 you know, like that one
NOTE Confidence: 0.9647433
01:17:24.770 --> 01:17:26.290 society that suppresses play by
NOTE Confidence: 0.9647433
01:17:26.290 --> 01:17:27.429 burning kids' hands.
NOTE Confidence: 0.994166
01:17:28.130 --> 01:17:29.170 They apply a lot of
NOTE Confidence: 0.994166
01:17:29.170 --> 01:17:30.985 force to stop the innate
NOTE Confidence: 0.994166
01:17:30.985 --> 01:17:32.045 desire to play.
NOTE Confidence: 0.9395014
01:17:33.625 --> 01:17:34.745 So so Nicholas Yeah. Thank
NOTE Confidence: 0.9395014

01:17:34.745 --> 01:17:36.505 thank you. So so you
NOTE Confidence: 0.9395014

01:17:36.505 --> 01:17:37.625 couldn't I couldn't help but
NOTE Confidence: 0.9395014

01:17:37.625 --> 01:17:38.745 think when I was listening
NOTE Confidence: 0.9395014

01:17:38.745 --> 01:17:39.545 to your talk that a
NOTE Confidence: 0.9395014

01:17:39.545 --> 01:17:41.064 lot of what ails us
NOTE Confidence: 0.9395014

01:17:41.064 --> 01:17:41.965 as a species,
NOTE Confidence: 0.8845574

01:17:42.585 --> 01:17:43.564 wars, genocides,
NOTE Confidence: 0.9328268

01:17:44.300 --> 01:17:45.439 dissolution of democracy,
NOTE Confidence: 0.9508678

01:17:46.540 --> 01:17:47.900 to some extent comes down
NOTE Confidence: 0.9508678

01:17:47.900 --> 01:17:49.280 to things like polarization
NOTE Confidence: 0.953993

01:17:49.900 --> 01:17:51.100 and in groups and out
NOTE Confidence: 0.953993

01:17:51.100 --> 01:17:51.600 groups.
NOTE Confidence: 0.97357243

01:17:52.300 --> 01:17:53.820 And even on smaller scales,
NOTE Confidence: 0.97357243

01:17:53.820 --> 01:17:55.100 like within a school, for
NOTE Confidence: 0.97357243

01:17:55.100 --> 01:17:56.620 example, you have cliques and
NOTE Confidence: 0.97357243

01:17:56.620 --> 01:17:57.580 you're either in or you're

NOTE Confidence: 0.97357243
01:17:57.580 --> 01:17:58.080 out.
NOTE Confidence: 0.9855985
01:17:58.655 --> 01:18:01.055 And the persistence of this
NOTE Confidence: 0.9855985
01:18:01.055 --> 01:18:02.335 notion of in groups and
NOTE Confidence: 0.9855985
01:18:02.335 --> 01:18:03.455 out groups makes me wonder
NOTE Confidence: 0.9855985
01:18:03.455 --> 01:18:04.415 whether there's some sort of
NOTE Confidence: 0.9855985
01:18:04.415 --> 01:18:05.314 counter to
NOTE Confidence: 0.999665
01:18:05.775 --> 01:18:06.675 your thesis
NOTE Confidence: 0.9027664
01:18:07.135 --> 01:18:08.594 that maybe there is something
NOTE Confidence: 0.9892059
01:18:09.055 --> 01:18:10.975 that drives the species to
NOTE Confidence: 0.9892059
01:18:10.975 --> 01:18:12.195 create exclusivity.
NOTE Confidence: 0.93328476
01:18:14.370 --> 01:18:15.490 And with that and where
NOTE Confidence: 0.93328476
01:18:15.490 --> 01:18:16.450 does that fit into your
NOTE Confidence: 0.93328476
01:18:16.450 --> 01:18:17.410 life? So that was on
NOTE Confidence: 0.93328476
01:18:17.410 --> 01:18:18.010 the list. Right?
NOTE Confidence: 0.97745395
01:18:19.810 --> 01:18:20.770 And but I didn't discuss
NOTE Confidence: 0.97745395

01:18:20.770 --> 01:18:21.650 it because I didn't want
NOTE Confidence: 0.97745395

01:18:21.650 --> 01:18:22.150 to.
NOTE Confidence: 0.9850015

01:18:22.770 --> 01:18:23.670 I did say
NOTE Confidence: 0.85490656

01:18:24.450 --> 01:18:26.290 it's it's number, five on
NOTE Confidence: 0.85490656

01:18:26.290 --> 01:18:27.510 our list, in group preference,
NOTE Confidence: 0.85490656

01:18:27.729 --> 01:18:29.189 which it makes very uncomfortable
NOTE Confidence: 0.85490656

01:18:29.250 --> 01:18:29.595 for me.
NOTE Confidence: 0.94987357

01:18:30.475 --> 01:18:31.675 And, it is a part
NOTE Confidence: 0.94987357

01:18:31.675 --> 01:18:33.275 of the social suite, and,
NOTE Confidence: 0.94987357

01:18:33.595 --> 01:18:34.955 we are very groupie species.
NOTE Confidence: 0.94987357

01:18:34.955 --> 01:18:36.155 Now there's a very it's
NOTE Confidence: 0.94987357

01:18:36.155 --> 01:18:37.035 all discussed in the book
NOTE Confidence: 0.94987357

01:18:37.035 --> 01:18:38.015 with lots of references.
NOTE Confidence: 0.90244585

01:18:38.635 --> 01:18:39.595 We are a very groupie
NOTE Confidence: 0.90244585

01:18:39.595 --> 01:18:40.095 species.
NOTE Confidence: 0.9926102

01:18:41.755 --> 01:18:42.715 But, you know, there's a

NOTE Confidence: 0.9926102
01:18:42.715 --> 01:18:44.255 big difference between saying,
NOTE Confidence: 0.98775744
01:18:47.320 --> 01:18:47.960 we are,
NOTE Confidence: 0.9932328
01:18:48.599 --> 01:18:49.260 you know,
NOTE Confidence: 0.6345593
01:18:49.760 --> 01:18:50.260 we
NOTE Confidence: 0.97885007
01:18:50.760 --> 01:18:52.380 love our group and and
NOTE Confidence: 0.97885007
01:18:52.679 --> 01:18:53.559 and we don't love the
NOTE Confidence: 0.97885007
01:18:53.559 --> 01:18:54.219 other group
NOTE Confidence: 0.96779895
01:18:54.760 --> 01:18:56.199 and or we love our
NOTE Confidence: 0.96779895
01:18:56.199 --> 01:18:57.320 group and the other group
NOTE Confidence: 0.96779895
01:18:57.320 --> 01:18:58.219 should be exterminated.
NOTE Confidence: 0.9705787
01:18:59.000 --> 01:18:59.945 And so the question is
NOTE Confidence: 0.9705787
01:18:59.945 --> 01:19:01.545 where does that desire come
NOTE Confidence: 0.9705787
01:19:01.545 --> 01:19:02.745 from? Now taking a step
NOTE Confidence: 0.9705787
01:19:02.745 --> 01:19:04.185 back first on the why
NOTE Confidence: 0.9705787
01:19:04.185 --> 01:19:05.385 do we preferentially love our
NOTE Confidence: 0.9705787

01:19:05.385 --> 01:19:07.064 group, there's an interesting set

NOTE Confidence: 0.9705787

01:19:07.064 --> 01:19:08.185 of arguments about how in

NOTE Confidence: 0.9705787

01:19:08.185 --> 01:19:08.925 group preference

NOTE Confidence: 0.9704862

01:19:09.225 --> 01:19:10.585 actually was necessary for the

NOTE Confidence: 0.9704862

01:19:10.585 --> 01:19:11.725 emergence of cooperation.

NOTE Confidence: 0.9991951

01:19:12.104 --> 01:19:12.825 And let me see if

NOTE Confidence: 0.9991951

01:19:12.825 --> 01:19:13.945 I can illustrate this point

NOTE Confidence: 0.9991951

01:19:13.945 --> 01:19:14.665 with a little bit of

NOTE Confidence: 0.9991951

01:19:14.665 --> 01:19:15.030 a thought

NOTE Confidence: 0.9270176

01:19:15.989 --> 01:19:17.510 experiment. So the idea is

NOTE Confidence: 0.9270176

01:19:17.510 --> 01:19:18.469 imagine if I there were

NOTE Confidence: 0.9270176

01:19:18.469 --> 01:19:19.530 a thousand of you,

NOTE Confidence: 0.99744016

01:19:20.070 --> 01:19:21.130 and I told you,

NOTE Confidence: 0.989476

01:19:22.710 --> 01:19:23.849 be nice to each other.

NOTE Confidence: 0.94768554

01:19:24.309 --> 01:19:25.189 All of you be nice

NOTE Confidence: 0.94768554

01:19:25.189 --> 01:19:25.929 to each other.

NOTE Confidence: 0.9752777

01:19:26.550 --> 01:19:27.750 Well, you might start being

NOTE Confidence: 0.9752777

01:19:27.750 --> 01:19:28.789 bumped into someone of the

NOTE Confidence: 0.9752777

01:19:28.789 --> 01:19:29.670 thousand. You might be nice

NOTE Confidence: 0.9752777

01:19:29.670 --> 01:19:30.735 to them a little bit.

NOTE Confidence: 0.9752777

01:19:30.814 --> 01:19:31.695 But after a while, you

NOTE Confidence: 0.9752777

01:19:31.695 --> 01:19:32.494 might never bump into that

NOTE Confidence: 0.9752777

01:19:32.494 --> 01:19:33.455 person again. You might have

NOTE Confidence: 0.9752777

01:19:33.455 --> 01:19:34.755 no expectation of a return.

NOTE Confidence: 0.95838153

01:19:35.534 --> 01:19:36.494 You can't even track the

NOTE Confidence: 0.95838153

01:19:36.494 --> 01:19:37.455 person. There are a thousand

NOTE Confidence: 0.95838153

01:19:37.455 --> 01:19:38.895 faces. You can't remember who's

NOTE Confidence: 0.95838153

01:19:38.895 --> 01:19:39.395 who.

NOTE Confidence: 0.96053046

01:19:39.935 --> 01:19:40.975 And and and if I

NOTE Confidence: 0.96053046

01:19:40.975 --> 01:19:42.255 measure the level of cooperation

NOTE Confidence: 0.96053046

01:19:42.255 --> 01:19:43.215 at the outset and then

NOTE Confidence: 0.96053046

01:19:43.215 --> 01:19:44.130 I came back a few
NOTE Confidence: 0.96053046

01:19:44.130 --> 01:19:45.250 hours later after you guys
NOTE Confidence: 0.96053046

01:19:45.250 --> 01:19:46.450 had or days or weeks
NOTE Confidence: 0.96053046

01:19:46.450 --> 01:19:47.910 or whatever the experiment is,
NOTE Confidence: 0.96053046

01:19:48.050 --> 01:19:48.850 I would find that there's
NOTE Confidence: 0.96053046

01:19:48.850 --> 01:19:50.210 very little cooperation in this
NOTE Confidence: 0.96053046

01:19:50.210 --> 01:19:51.590 group of a thousand people.
NOTE Confidence: 0.966376

01:19:52.210 --> 01:19:53.810 Now imagine instead that I
NOTE Confidence: 0.966376

01:19:53.810 --> 01:19:54.930 issue I divide you into
NOTE Confidence: 0.966376

01:19:54.930 --> 01:19:55.810 ten groups of a hundred
NOTE Confidence: 0.966376

01:19:55.810 --> 01:19:56.610 and give you a purple
NOTE Confidence: 0.966376

01:19:56.610 --> 01:19:57.650 flag and a green flag
NOTE Confidence: 0.966376

01:19:57.650 --> 01:19:59.135 and an orange flag. And
NOTE Confidence: 0.966376

01:19:59.135 --> 01:19:59.854 I just say to you,
NOTE Confidence: 0.966376

01:19:59.854 --> 01:20:00.415 I get up on a
NOTE Confidence: 0.966376

01:20:00.415 --> 01:20:01.535 podium and I say, okay.

NOTE Confidence: 0.966376
01:20:01.535 --> 01:20:02.335 Just be nice to the
NOTE Confidence: 0.966376
01:20:02.335 --> 01:20:03.375 people holding your own color
NOTE Confidence: 0.966376
01:20:03.375 --> 01:20:03.875 flag.
NOTE Confidence: 0.93281215
01:20:04.655 --> 01:20:06.015 And even hearing my telling
NOTE Confidence: 0.93281215
01:20:06.015 --> 01:20:07.295 the story, you immediately intuit
NOTE Confidence: 0.93281215
01:20:07.295 --> 01:20:08.335 that that's a much easier
NOTE Confidence: 0.93281215
01:20:08.335 --> 01:20:09.535 challenge. First of all, you
NOTE Confidence: 0.93281215
01:20:09.535 --> 01:20:10.735 can track the hundred people
NOTE Confidence: 0.93281215
01:20:10.735 --> 01:20:11.395 more readily.
NOTE Confidence: 0.9840046
01:20:11.730 --> 01:20:12.530 When you bump you don't
NOTE Confidence: 0.9840046
01:20:12.530 --> 01:20:13.170 have to be nice to
NOTE Confidence: 0.9840046
01:20:13.170 --> 01:20:13.970 all thousand. You know, when
NOTE Confidence: 0.9840046
01:20:13.970 --> 01:20:14.930 you bump into the wrong
NOTE Confidence: 0.9840046
01:20:14.930 --> 01:20:15.970 color flag, you're just nice
NOTE Confidence: 0.9840046
01:20:15.970 --> 01:20:17.110 to your own color flag.
NOTE Confidence: 0.9756902

01:20:17.890 --> 01:20:18.930 And and in that type
NOTE Confidence: 0.9756902

01:20:18.930 --> 01:20:19.730 of the world, if I
NOTE Confidence: 0.9756902

01:20:19.730 --> 01:20:21.010 came back months or days
NOTE Confidence: 0.9756902

01:20:21.010 --> 01:20:22.210 or whatever later, I might
NOTE Confidence: 0.9756902

01:20:22.210 --> 01:20:23.250 find a lot of cooperation
NOTE Confidence: 0.9756902

01:20:23.250 --> 01:20:23.970 in that group of a
NOTE Confidence: 0.9756902

01:20:23.970 --> 01:20:25.445 thousand. So it turns out
NOTE Confidence: 0.9756902

01:20:25.445 --> 01:20:26.724 that mathematically, this is known
NOTE Confidence: 0.9756902

01:20:26.724 --> 01:20:27.925 as adding structure to the
NOTE Confidence: 0.9756902

01:20:27.925 --> 01:20:29.204 population. Turns out if you
NOTE Confidence: 0.9756902

01:20:29.204 --> 01:20:30.724 if you subdivide the population
NOTE Confidence: 0.9756902

01:20:30.724 --> 01:20:32.244 either into groups or into
NOTE Confidence: 0.9756902

01:20:32.244 --> 01:20:32.744 networks
NOTE Confidence: 0.958144

01:20:33.204 --> 01:20:34.244 so, like, you are not
NOTE Confidence: 0.958144

01:20:34.244 --> 01:20:35.445 nice to everybody. You are
NOTE Confidence: 0.958144

01:20:35.445 --> 01:20:36.405 actually a very nice person.

NOTE Confidence: 0.958144

01:20:36.405 --> 01:20:37.364 You are nice to almost

NOTE Confidence: 0.958144

01:20:37.364 --> 01:20:38.965 everybody, but you're especially nice

NOTE Confidence: 0.958144

01:20:38.965 --> 01:20:39.784 to your friends.

NOTE Confidence: 0.9775077

01:20:40.200 --> 01:20:41.239 Right? You're also a little

NOTE Confidence: 0.9775077

01:20:41.239 --> 01:20:42.280 nice to strangers, but you're

NOTE Confidence: 0.9775077

01:20:42.280 --> 01:20:43.160 nicer to your friends than

NOTE Confidence: 0.9775077

01:20:43.160 --> 01:20:44.700 you are to strangers. K?

NOTE Confidence: 0.9775077

01:20:44.920 --> 01:20:45.800 So every one of us

NOTE Confidence: 0.9775077

01:20:45.800 --> 01:20:46.680 is nicer to our friends

NOTE Confidence: 0.9775077

01:20:46.680 --> 01:20:47.560 than we are to strangers.

NOTE Confidence: 0.9775077

01:20:47.560 --> 01:20:48.840 That's the same solution. The

NOTE Confidence: 0.9775077

01:20:48.840 --> 01:20:50.600 emergence of social networks in

NOTE Confidence: 0.9775077

01:20:50.600 --> 01:20:52.280 our evolutionary past is to

NOTE Confidence: 0.9775077

01:20:52.280 --> 01:20:53.885 help solve this problem. So

NOTE Confidence: 0.9775077

01:20:53.885 --> 01:20:54.844 it turns out that in

NOTE Confidence: 0.9775077

01:20:54.844 --> 01:20:56.205 group preference, it is argued,
NOTE Confidence: 0.9775077

01:20:56.205 --> 01:20:57.005 and I believe it is
NOTE Confidence: 0.9775077

01:20:57.005 --> 01:20:58.205 true, and there's some evidence
NOTE Confidence: 0.9775077

01:20:58.205 --> 01:20:59.265 for it on the evolutionary
NOTE Confidence: 0.9775077

01:20:59.324 --> 01:20:59.824 record,
NOTE Confidence: 0.9903167

01:21:01.725 --> 01:21:03.165 was required for the emergence
NOTE Confidence: 0.9903167

01:21:03.165 --> 01:21:04.625 of cooperation in our species.
NOTE Confidence: 0.9566092

01:21:05.005 --> 01:21:06.445 But the question remains, okay,
NOTE Confidence: 0.9566092

01:21:06.445 --> 01:21:07.405 it's one thing that why
NOTE Confidence: 0.9566092

01:21:07.405 --> 01:21:08.045 do you have to hate
NOTE Confidence: 0.9566092

01:21:08.045 --> 01:21:08.689 the other group? Why Why
NOTE Confidence: 0.9566092

01:21:08.689 --> 01:21:09.090 do we have to be
NOTE Confidence: 0.9566092

01:21:09.090 --> 01:21:10.050 warlike to that group? And,
NOTE Confidence: 0.9566092

01:21:10.050 --> 01:21:10.770 actually, this is also an
NOTE Confidence: 0.9566092

01:21:10.770 --> 01:21:12.770 old sociological question. I'm blocking
NOTE Confidence: 0.9566092

01:21:12.770 --> 01:21:13.489 on the name right now.

NOTE Confidence: 0.9566092

01:21:13.489 --> 01:21:14.449 Spencer, I think was his

NOTE Confidence: 0.9566092

01:21:14.449 --> 01:21:15.650 name. It's either Spencer or

NOTE Confidence: 0.9566092

01:21:15.650 --> 01:21:16.530 Summers. It was actually a

NOTE Confidence: 0.9566092

01:21:16.530 --> 01:21:17.250 guy at Yale a hundred

NOTE Confidence: 0.9566092

01:21:17.250 --> 01:21:17.969 years ago. Do you remember

NOTE Confidence: 0.9566092

01:21:17.969 --> 01:21:18.610 which one it was? You

NOTE Confidence: 0.9566092

01:21:18.610 --> 01:21:20.050 don't remember, Julia. I'm looking

NOTE Confidence: 0.9566092

01:21:20.050 --> 01:21:20.710 at you.

NOTE Confidence: 0.91868657

01:21:21.090 --> 01:21:22.785 But, anyway, there was, putting

NOTE Confidence: 0.91868657

01:21:22.785 --> 01:21:23.665 you on the spot. It

NOTE Confidence: 0.91868657

01:21:23.665 --> 01:21:25.505 was either Spencer or or,

NOTE Confidence: 0.91868657

01:21:25.905 --> 01:21:26.625 or or,

NOTE Confidence: 0.9853177

01:21:27.665 --> 01:21:28.625 or the other guy I

NOTE Confidence: 0.9853177

01:21:28.625 --> 01:21:30.705 just mentioned. Summers. Summers. I

NOTE Confidence: 0.9853177

01:21:30.705 --> 01:21:31.685 think it was Summers.

NOTE Confidence: 0.9641473

01:21:32.864 --> 01:21:34.385 He he talks about this,
NOTE Confidence: 0.9641473

01:21:34.385 --> 01:21:35.850 like, warlike tendency and, like,
NOTE Confidence: 0.9641473

01:21:35.850 --> 01:21:36.729 the the fact that, you
NOTE Confidence: 0.9641473

01:21:36.729 --> 01:21:38.270 know, when when you're fighting
NOTE Confidence: 0.9641473

01:21:38.330 --> 01:21:39.530 another group, you would lead
NOTE Confidence: 0.9641473

01:21:39.530 --> 01:21:41.050 to solidarity in our group.
NOTE Confidence: 0.9641473

01:21:41.050 --> 01:21:42.170 In fact, some people believe,
NOTE Confidence: 0.9641473

01:21:42.170 --> 01:21:43.389 and I think it's true,
NOTE Confidence: 0.9641473

01:21:43.530 --> 01:21:44.330 that the fall of the
NOTE Confidence: 0.9641473

01:21:44.330 --> 01:21:45.929 Soviet Union was one of
NOTE Confidence: 0.9641473

01:21:45.929 --> 01:21:46.810 the things that leads to
NOTE Confidence: 0.9641473

01:21:46.810 --> 01:21:47.929 our present divisions in our
NOTE Confidence: 0.9641473

01:21:47.929 --> 01:21:49.415 society because we're not united
NOTE Confidence: 0.9641473

01:21:49.415 --> 01:21:50.775 against the common enemy. So
NOTE Confidence: 0.9641473

01:21:50.775 --> 01:21:51.995 we've fallen upon ourselves.
NOTE Confidence: 0.91241485

01:21:52.615 --> 01:21:53.115 So,

NOTE Confidence: 0.9613442

01:21:53.895 --> 01:21:55.095 so, yes, so in group

NOTE Confidence: 0.9613442

01:21:55.095 --> 01:21:56.055 preference, there's a whole chapter

NOTE Confidence: 0.9613442

01:21:56.055 --> 01:21:56.615 on it in the book.

NOTE Confidence: 0.9613442

01:21:56.615 --> 01:21:57.495 If you're interested in more

NOTE Confidence: 0.9613442

01:21:57.495 --> 01:21:58.535 than that, it's there. It's

NOTE Confidence: 0.9613442

01:21:58.535 --> 01:21:59.895 unfortunately part of our social

NOTE Confidence: 0.9613442

01:21:59.895 --> 01:22:01.175 suite. It's it's the least

NOTE Confidence: 0.9613442

01:22:01.175 --> 01:22:02.850 nice part. The mild hierarchy

NOTE Confidence: 0.9613442

01:22:02.850 --> 01:22:03.410 doesn't bother me,

NOTE Confidence: 0.92449063

01:22:04.850 --> 01:22:05.970 for a variety of reasons,

NOTE Confidence: 0.92449063

01:22:06.370 --> 01:22:06.870 because,

NOTE Confidence: 0.9721202

01:22:08.050 --> 01:22:09.090 for example, I have no

NOTE Confidence: 0.9721202

01:22:09.090 --> 01:22:10.610 musical ability, and I am

NOTE Confidence: 0.9721202

01:22:10.610 --> 01:22:11.650 so grateful that there are

NOTE Confidence: 0.9721202

01:22:11.650 --> 01:22:13.650 talented musicians that have are

NOTE Confidence: 0.9721202

01:22:13.650 --> 01:22:15.245 above me. I mean, I
NOTE Confidence: 0.9721202

01:22:15.245 --> 01:22:16.925 benefit from those musicians so
NOTE Confidence: 0.9721202

01:22:16.925 --> 01:22:18.765 much. And, you know, my
NOTE Confidence: 0.9721202

01:22:18.765 --> 01:22:19.885 physics is good, but I'm
NOTE Confidence: 0.9721202

01:22:19.885 --> 01:22:21.005 not a quantum physicist. And
NOTE Confidence: 0.9721202

01:22:21.005 --> 01:22:22.445 I am so grateful that
NOTE Confidence: 0.9721202

01:22:22.445 --> 01:22:23.645 there are quantum physicists who
NOTE Confidence: 0.9721202

01:22:23.645 --> 01:22:24.845 do what they do. So
NOTE Confidence: 0.9721202

01:22:24.845 --> 01:22:26.365 I think and Thomas Jefferson
NOTE Confidence: 0.9721202

01:22:26.365 --> 01:22:28.145 makes a wonderful argument about,
NOTE Confidence: 0.9721202

01:22:28.360 --> 01:22:28.920 you know, it would have
NOTE Confidence: 0.9721202

01:22:28.920 --> 01:22:30.280 been odd for God to
NOTE Confidence: 0.9721202

01:22:30.280 --> 01:22:31.720 endow us for well, he
NOTE Confidence: 0.9721202

01:22:31.720 --> 01:22:32.680 didn't mean God, but to
NOTE Confidence: 0.9721202

01:22:32.680 --> 01:22:33.960 be to be placed into
NOTE Confidence: 0.9721202

01:22:33.960 --> 01:22:35.479 a social state and not

NOTE Confidence: 0.9721202
01:22:35.479 --> 01:22:37.420 be given the talents enough
NOTE Confidence: 0.9721202
01:22:37.479 --> 01:22:38.700 to regulate ourselves.
NOTE Confidence: 0.9182904
01:22:39.080 --> 01:22:40.220 So I think the heterogeneity
NOTE Confidence: 0.9182904
01:22:40.440 --> 01:22:42.195 across humans and abilities is
NOTE Confidence: 0.9182904
01:22:42.195 --> 01:22:43.635 actually a blessing for human
NOTE Confidence: 0.9182904
01:22:43.635 --> 01:22:45.075 beings, not a not a
NOTE Confidence: 0.9182904
01:22:45.075 --> 01:22:46.515 vice. You know? Just one
NOTE Confidence: 0.9182904
01:22:46.515 --> 01:22:48.035 final comment about your point
NOTE Confidence: 0.9182904
01:22:48.035 --> 01:22:49.575 about in in group preference.
NOTE Confidence: 0.9182904
01:22:49.635 --> 01:22:51.075 I've heard some people say
NOTE Confidence: 0.9182904
01:22:51.075 --> 01:22:52.775 that the emergence of sports
NOTE Confidence: 0.9716331
01:22:53.635 --> 01:22:54.275 actually was
NOTE Confidence: 0.9566554
01:22:54.930 --> 01:22:56.290 almost like a solution to
NOTE Confidence: 0.9566554
01:22:56.290 --> 01:22:57.890 war. Yes. Yes. Yes. Yes.
NOTE Confidence: 0.9566554
01:22:57.890 --> 01:22:59.010 And I'm sure that's true.
NOTE Confidence: 0.9566554

01:22:59.010 --> 01:22:59.750 Yeah. Absolutely.
NOTE Confidence: 0.9120846

01:23:00.370 --> 01:23:01.570 Absolutely, that is the case.
NOTE Confidence: 0.9120846

01:23:01.570 --> 01:23:03.270 It's grafted onto the whole
NOTE Confidence: 0.9120846

01:23:03.330 --> 01:23:04.610 the the whole obsession with
NOTE Confidence: 0.9120846

01:23:04.610 --> 01:23:06.210 sports and the playing of
NOTE Confidence: 0.9120846

01:23:06.210 --> 01:23:06.710 sports
NOTE Confidence: 0.9872504

01:23:07.075 --> 01:23:09.175 is clearly a desirable outlet.
NOTE Confidence: 0.9872504

01:23:09.395 --> 01:23:10.035 By the way, this is
NOTE Confidence: 0.9872504

01:23:10.035 --> 01:23:11.235 the same argument that's used
NOTE Confidence: 0.9872504

01:23:11.235 --> 01:23:12.915 by by free speech defenders
NOTE Confidence: 0.9872504

01:23:12.915 --> 01:23:14.035 that we would rather have
NOTE Confidence: 0.9872504

01:23:14.035 --> 01:23:15.235 people talk to each other
NOTE Confidence: 0.9872504

01:23:15.235 --> 01:23:16.515 than than kill each other.
NOTE Confidence: 0.9872504

01:23:16.515 --> 01:23:18.515 Right? I'd rather hear violent
NOTE Confidence: 0.9872504

01:23:18.515 --> 01:23:20.435 words than experience violent acts.
NOTE Confidence: 0.9872504

01:23:20.435 --> 01:23:21.875 So we should protect speech

NOTE Confidence: 0.9872504
01:23:21.875 --> 01:23:23.280 and restrict acts. So, you
NOTE Confidence: 0.9872504
01:23:23.280 --> 01:23:24.320 know, we should have lots
NOTE Confidence: 0.9872504
01:23:24.320 --> 01:23:26.079 of sporting events and avoid
NOTE Confidence: 0.9872504
01:23:26.079 --> 01:23:27.300 warfare. Yes.
NOTE Confidence: 0.9449908
01:23:27.920 --> 01:23:28.800 Yes. Back in the back
NOTE Confidence: 0.9449908
01:23:28.800 --> 01:23:30.099 there. Nice.
NOTE Confidence: 0.9051967
01:23:30.800 --> 01:23:31.300 Okay.
NOTE Confidence: 0.8936417
01:23:31.760 --> 01:23:32.800 Thank you so much for
NOTE Confidence: 0.8936417
01:23:32.800 --> 01:23:34.400 wonderful talk and wonderful topic.
NOTE Confidence: 0.8936417
01:23:34.400 --> 01:23:34.845 I love
NOTE Confidence: 0.9846391
01:23:35.725 --> 01:23:36.845 it. Do you think it's
NOTE Confidence: 0.9846391
01:23:36.845 --> 01:23:38.525 feasible to have a tool
NOTE Confidence: 0.9846391
01:23:38.525 --> 01:23:40.365 or commercialize a tool that
NOTE Confidence: 0.9846391
01:23:40.365 --> 01:23:41.185 can intentionally
NOTE Confidence: 0.99542207
01:23:41.645 --> 01:23:42.865 shape social connections
NOTE Confidence: 0.9350989

01:23:43.405 --> 01:23:45.325 in systems like factories or
NOTE Confidence: 0.9350989

01:23:45.325 --> 01:23:47.345 labs or residency programs
NOTE Confidence: 0.9063875

01:23:47.700 --> 01:23:48.840 to improve cooperation?
NOTE Confidence: 0.991458

01:23:49.300 --> 01:23:50.660 Yes. And if yes, where
NOTE Confidence: 0.991458

01:23:50.660 --> 01:23:52.260 is the ethical line between
NOTE Confidence: 0.991458

01:23:52.260 --> 01:23:53.960 just facilitating teamwork
NOTE Confidence: 0.97103786

01:23:54.580 --> 01:23:55.880 or manipulating,
NOTE Confidence: 0.991933

01:23:56.420 --> 01:23:57.320 social dynamic?
NOTE Confidence: 0.99788636

01:23:57.939 --> 01:23:58.979 So we we have done
NOTE Confidence: 0.99788636

01:23:58.979 --> 01:24:00.840 that. We have we have
NOTE Confidence: 0.98650324

01:24:01.425 --> 01:24:02.945 done those experiments. We've also
NOTE Confidence: 0.98650324

01:24:02.945 --> 01:24:04.224 consulted with different kinds of
NOTE Confidence: 0.98650324

01:24:04.224 --> 01:24:05.104 firms, you know, how to
NOTE Confidence: 0.98650324

01:24:05.104 --> 01:24:06.545 decrease bullying in school by
NOTE Confidence: 0.98650324

01:24:06.545 --> 01:24:08.405 changing seating arrangements in classrooms,
NOTE Confidence: 0.97881657

01:24:09.425 --> 01:24:10.784 how to reduce accidents on

NOTE Confidence: 0.97881657

01:24:10.784 --> 01:24:12.965 factory shop floors by manipulating

NOTE Confidence: 0.97881657

01:24:13.104 --> 01:24:14.304 who's connected to whom on

NOTE Confidence: 0.97881657

01:24:14.304 --> 01:24:16.060 the shop floor, changing in

NOTE Confidence: 0.97881657

01:24:16.060 --> 01:24:17.260 shifts. You know, like, if

NOTE Confidence: 0.97881657

01:24:17.260 --> 01:24:18.380 you stagger shifts in a

NOTE Confidence: 0.97881657

01:24:18.380 --> 01:24:20.160 particular way, you reduce friendships.

NOTE Confidence: 0.96876717

01:24:20.540 --> 01:24:21.740 So, actually, there's there's a

NOTE Confidence: 0.96876717

01:24:21.740 --> 01:24:23.260 cost you pay by staggering

NOTE Confidence: 0.96876717

01:24:23.260 --> 01:24:23.760 shifts,

NOTE Confidence: 0.9066114

01:24:24.220 --> 01:24:24.939 and you can and there's

NOTE Confidence: 0.9066114

01:24:24.939 --> 01:24:25.760 a trade off.

NOTE Confidence: 0.95660275

01:24:26.300 --> 01:24:27.180 So but and you can

NOTE Confidence: 0.95660275

01:24:27.180 --> 01:24:28.305 judge. Like, people are more

NOTE Confidence: 0.95660275

01:24:28.305 --> 01:24:29.185 friendly with each other if

NOTE Confidence: 0.95660275

01:24:29.185 --> 01:24:29.905 they all start work at

NOTE Confidence: 0.95660275

01:24:29.905 --> 01:24:31.185 the same time that leads
NOTE Confidence: 0.95660275

01:24:31.185 --> 01:24:32.225 to more social connections that
NOTE Confidence: 0.95660275

01:24:32.225 --> 01:24:33.125 actually might reduce,
NOTE Confidence: 0.9890599

01:24:33.905 --> 01:24:35.425 accidents on the shop floor.
NOTE Confidence: 0.9890599

01:24:35.425 --> 01:24:36.305 So all of those things
NOTE Confidence: 0.9890599

01:24:36.305 --> 01:24:37.425 are done. But it's absolutely
NOTE Confidence: 0.9890599

01:24:37.425 --> 01:24:38.705 true as well that everything
NOTE Confidence: 0.9890599

01:24:38.705 --> 01:24:39.665 I've told you today could
NOTE Confidence: 0.9890599

01:24:39.665 --> 01:24:40.865 be reverse engineered and used
NOTE Confidence: 0.9890599

01:24:40.865 --> 01:24:41.985 by our opponents and is
NOTE Confidence: 0.9890599

01:24:41.985 --> 01:24:43.125 being used by our opponents.
NOTE Confidence: 0.9890599

01:24:43.390 --> 01:24:44.670 So China and Russia are
NOTE Confidence: 0.9890599

01:24:44.670 --> 01:24:45.489 quite explicitly,
NOTE Confidence: 0.9940331

01:24:46.430 --> 01:24:47.630 intervening in our society in
NOTE Confidence: 0.9940331

01:24:47.630 --> 01:24:49.489 a way to foment dissension
NOTE Confidence: 0.9940331

01:24:49.750 --> 01:24:51.010 and privilege

NOTE Confidence: 0.9783719

01:24:51.390 --> 01:24:52.750 in group bias and and

NOTE Confidence: 0.9783719

01:24:52.750 --> 01:24:54.830 so on. So so every

NOTE Confidence: 0.9783719

01:24:54.830 --> 01:24:55.870 single thing I've talked about

NOTE Confidence: 0.9783719

01:24:55.870 --> 01:24:56.750 today could be used for

NOTE Confidence: 0.9783719

01:24:56.750 --> 01:24:57.870 good or for ill purpose.

NOTE Confidence: 0.9783719

01:24:57.870 --> 01:24:58.510 Of course, in my lab,

NOTE Confidence: 0.9783719

01:24:58.510 --> 01:24:59.445 we just are focused and

NOTE Confidence: 0.9783719

01:24:59.445 --> 01:25:00.745 and use it for good,

NOTE Confidence: 0.9783719

01:25:00.885 --> 01:25:01.765 but I have no doubt

NOTE Confidence: 0.9783719

01:25:01.765 --> 01:25:03.465 that people are using this

NOTE Confidence: 0.9783719

01:25:03.604 --> 01:25:03.845 and,

NOTE Confidence: 0.9870294

01:25:04.405 --> 01:25:05.385 for evil purposes.

NOTE Confidence: 0.9560491

01:25:05.925 --> 01:25:07.445 So, so, yeah, like, if

NOTE Confidence: 0.9560491

01:25:07.445 --> 01:25:08.425 you're trying to,

NOTE Confidence: 0.9975252

01:25:09.125 --> 01:25:10.405 increase you know, amongst

NOTE Confidence: 0.9849089

01:25:11.410 --> 01:25:12.290 I talk about this with
NOTE Confidence: 0.9849089

01:25:12.290 --> 01:25:13.330 other doctors my age. So
NOTE Confidence: 0.9849089

01:25:13.330 --> 01:25:14.210 Mark and I, we have
NOTE Confidence: 0.9849089

01:25:14.210 --> 01:25:15.970 this dinner group with four
NOTE Confidence: 0.9849089

01:25:15.970 --> 01:25:16.790 four docs,
NOTE Confidence: 0.9642427

01:25:17.330 --> 01:25:17.729 in this,
NOTE Confidence: 0.962433

01:25:19.090 --> 01:25:20.530 at Yale where we meet,
NOTE Confidence: 0.962433

01:25:20.530 --> 01:25:21.410 like, once or twice a
NOTE Confidence: 0.962433

01:25:21.410 --> 01:25:22.530 year and talk about the
NOTE Confidence: 0.962433

01:25:22.530 --> 01:25:23.970 time of the Ironman when,
NOTE Confidence: 0.962433

01:25:24.050 --> 01:25:24.850 you know, we were house
NOTE Confidence: 0.962433

01:25:24.850 --> 01:25:25.350 officers.
NOTE Confidence: 0.871886

01:25:25.729 --> 01:25:26.229 And,
NOTE Confidence: 0.962788

01:25:26.885 --> 01:25:29.125 and, you know, kids these
NOTE Confidence: 0.962788

01:25:29.125 --> 01:25:30.485 days, they don't seem to
NOTE Confidence: 0.962788

01:25:30.485 --> 01:25:31.685 have the same commitment to

NOTE Confidence: 0.962788
01:25:31.685 --> 01:25:33.045 patient care that we we
NOTE Confidence: 0.962788
01:25:33.045 --> 01:25:34.805 did, you know, when we
NOTE Confidence: 0.962788
01:25:34.805 --> 01:25:36.505 are I'm joking. I'm like,
NOTE Confidence: 0.962788
01:25:36.645 --> 01:25:38.085 I know, Mark. I know.
NOTE Confidence: 0.962788
01:25:38.085 --> 01:25:39.045 I know. He did not
NOTE Confidence: 0.962788
01:25:39.045 --> 01:25:39.925 say that. I'll just take
NOTE Confidence: 0.962788
01:25:39.925 --> 01:25:41.445 advantage of the podium. So,
NOTE Confidence: 0.962788
01:25:41.445 --> 01:25:42.645 like, in fact, if anything,
NOTE Confidence: 0.962788
01:25:42.645 --> 01:25:43.500 he's the big defender of
NOTE Confidence: 0.962788
01:25:43.500 --> 01:25:44.479 kids these days.
NOTE Confidence: 0.9796947
01:25:45.179 --> 01:25:45.500 But,
NOTE Confidence: 0.9427016
01:25:45.979 --> 01:25:46.559 you know,
NOTE Confidence: 0.9347327
01:25:47.340 --> 01:25:48.619 so but but, actually, there
NOTE Confidence: 0.9347327
01:25:48.619 --> 01:25:49.659 is a sense in which
NOTE Confidence: 0.9347327
01:25:49.659 --> 01:25:50.539 there is a kind of,
NOTE Confidence: 0.9347327

01:25:51.020 --> 01:25:52.300 mentality. I I believe I'm
NOTE Confidence: 0.9347327

01:25:52.300 --> 01:25:52.900 gonna say this for my
NOTE Confidence: 0.9347327

01:25:52.939 --> 01:25:53.500 I'm not gonna speak for
NOTE Confidence: 0.9347327

01:25:53.500 --> 01:25:54.559 any of us, for myself.
NOTE Confidence: 0.9347327

01:25:54.699 --> 01:25:55.820 My understanding of modern,
NOTE Confidence: 0.95780426

01:25:57.105 --> 01:25:58.305 doctors in training is they
NOTE Confidence: 0.95780426

01:25:58.305 --> 01:25:59.425 have a much more workman
NOTE Confidence: 0.95780426

01:25:59.425 --> 01:26:00.865 like ID attitude and less
NOTE Confidence: 0.95780426

01:26:00.865 --> 01:26:02.705 professionalized attitude towards their job.
NOTE Confidence: 0.95780426

01:26:02.705 --> 01:26:03.985 They punch the clock more.
NOTE Confidence: 0.95780426

01:26:03.985 --> 01:26:04.865 When I was a house
NOTE Confidence: 0.95780426

01:26:04.865 --> 01:26:06.065 officer, you didn't leave the
NOTE Confidence: 0.95780426

01:26:06.065 --> 01:26:07.105 patient's bedside if they were
NOTE Confidence: 0.95780426

01:26:07.105 --> 01:26:07.985 sick. It didn't matter if
NOTE Confidence: 0.95780426

01:26:07.985 --> 01:26:09.025 your shift was over. You
NOTE Confidence: 0.95780426

01:26:09.025 --> 01:26:10.005 just didn't go.

NOTE Confidence: 0.94376355

01:26:10.545 --> 01:26:11.585 And we would work eighty,

NOTE Confidence: 0.94376355

01:26:11.585 --> 01:26:12.710 ninety hours a week. I

NOTE Confidence: 0.94376355

01:26:12.710 --> 01:26:13.750 recognize that could have caused

NOTE Confidence: 0.94376355

01:26:13.750 --> 01:26:15.670 other problems. Nobody cared about

NOTE Confidence: 0.94376355

01:26:15.670 --> 01:26:16.729 my work life balance.

NOTE Confidence: 0.95407283

01:26:17.270 --> 01:26:18.710 You know, but there was

NOTE Confidence: 0.95407283

01:26:18.710 --> 01:26:19.590 a kind of sense in

NOTE Confidence: 0.95407283

01:26:19.590 --> 01:26:21.189 which the patient came first

NOTE Confidence: 0.95407283

01:26:21.189 --> 01:26:22.390 no matter what. And by

NOTE Confidence: 0.95407283

01:26:22.390 --> 01:26:23.350 the way, this resolved other

NOTE Confidence: 0.95407283

01:26:23.350 --> 01:26:24.310 dilemmas. Like, now there's a

NOTE Confidence: 0.95407283

01:26:24.310 --> 01:26:25.270 lot of discussion. Like, should

NOTE Confidence: 0.95407283

01:26:25.270 --> 01:26:26.354 we care for racist patients?

NOTE Confidence: 0.95407283

01:26:26.595 --> 01:26:27.235 My answer to that is

NOTE Confidence: 0.95407283

01:26:27.235 --> 01:26:28.595 an immediate yes. You know,

NOTE Confidence: 0.95407283

01:26:28.595 --> 01:26:29.475 I remember there was a
NOTE Confidence: 0.95407283

01:26:29.475 --> 01:26:30.435 murder that was brought in
NOTE Confidence: 0.95407283

01:26:30.435 --> 01:26:31.075 when I was a house
NOTE Confidence: 0.95407283

01:26:31.075 --> 01:26:32.515 officer at, Hop at the
NOTE Confidence: 0.95407283

01:26:32.515 --> 01:26:33.495 University of Pennsylvania,
NOTE Confidence: 0.9730636

01:26:33.875 --> 01:26:35.314 and, Dan Brokoff, who was
NOTE Confidence: 0.9730636

01:26:35.314 --> 01:26:36.055 my attending,
NOTE Confidence: 0.9395168

01:26:36.435 --> 01:26:37.575 in the, ER,
NOTE Confidence: 0.9868836

01:26:38.530 --> 01:26:39.410 we were we were like,
NOTE Confidence: 0.9868836

01:26:39.410 --> 01:26:40.050 what should we do with
NOTE Confidence: 0.9868836

01:26:40.050 --> 01:26:41.010 this guy? He had just
NOTE Confidence: 0.9868836

01:26:41.010 --> 01:26:41.970 killed someone else that was
NOTE Confidence: 0.9868836

01:26:41.970 --> 01:26:43.650 brought in with glistening brain
NOTE Confidence: 0.9868836

01:26:43.650 --> 01:26:44.689 in his scalp. You know,
NOTE Confidence: 0.9868836

01:26:44.689 --> 01:26:45.890 we got both the decedent
NOTE Confidence: 0.9868836

01:26:45.890 --> 01:26:47.170 and the and the killer.

NOTE Confidence: 0.9868836
01:26:47.170 --> 01:26:48.210 The police told us the
NOTE Confidence: 0.9868836
01:26:48.210 --> 01:26:48.710 story.
NOTE Confidence: 0.9193334
01:26:49.010 --> 01:26:50.530 And and, Dan was like,
NOTE Confidence: 0.9193334
01:26:50.530 --> 01:26:51.570 there's no moral dilemma here.
NOTE Confidence: 0.9193334
01:26:51.570 --> 01:26:52.450 You save this guy's life.
NOTE Confidence: 0.9193334
01:26:52.450 --> 01:26:53.564 I mean, this is obvious.
NOTE Confidence: 0.9193334
01:26:53.564 --> 01:26:54.445 I mean, this is our
NOTE Confidence: 0.9193334
01:26:54.445 --> 01:26:55.324 commitment is the patient, and
NOTE Confidence: 0.9193334
01:26:55.324 --> 01:26:56.125 there's a kind of moral
NOTE Confidence: 0.9193334
01:26:56.125 --> 01:26:57.324 clarity that comes with that
NOTE Confidence: 0.9193334
01:26:57.324 --> 01:26:58.945 that's very freeing, actually.
NOTE Confidence: 0.9842251
01:26:59.725 --> 01:27:00.765 You know, that our job
NOTE Confidence: 0.9842251
01:27:00.765 --> 01:27:02.045 is that's not our our
NOTE Confidence: 0.9842251
01:27:02.045 --> 01:27:02.844 job is to care for
NOTE Confidence: 0.9842251
01:27:02.844 --> 01:27:03.725 the patient in front of
NOTE Confidence: 0.9842251

01:27:03.725 --> 01:27:04.445 us to the best of
NOTE Confidence: 0.9842251

01:27:04.445 --> 01:27:05.824 our powers. So
NOTE Confidence: 0.978147

01:27:07.120 --> 01:27:08.720 what I sense amongst some
NOTE Confidence: 0.978147

01:27:08.720 --> 01:27:10.400 house officers these days is
NOTE Confidence: 0.978147

01:27:10.400 --> 01:27:11.840 a kind of movement away
NOTE Confidence: 0.978147

01:27:11.840 --> 01:27:12.640 from some of those what
NOTE Confidence: 0.978147

01:27:12.640 --> 01:27:13.440 I would regard to be
NOTE Confidence: 0.978147

01:27:13.440 --> 01:27:15.200 foundational commitments. And the reason
NOTE Confidence: 0.978147

01:27:15.200 --> 01:27:15.840 I'm bringing it up in
NOTE Confidence: 0.978147

01:27:15.840 --> 01:27:16.640 response to you is you
NOTE Confidence: 0.978147

01:27:16.640 --> 01:27:17.440 might be asking me, was
NOTE Confidence: 0.978147

01:27:17.440 --> 01:27:18.320 there anything we can do
NOTE Confidence: 0.978147

01:27:18.320 --> 01:27:19.600 from what I'm telling you
NOTE Confidence: 0.978147

01:27:19.600 --> 01:27:21.135 that might help push the
NOTE Confidence: 0.978147

01:27:21.135 --> 01:27:22.655 culture back towards a more
NOTE Confidence: 0.978147

01:27:22.655 --> 01:27:23.934 desirable culture, if that's your

NOTE Confidence: 0.978147
01:27:23.934 --> 01:27:25.135 question? I'm reading a lot
NOTE Confidence: 0.978147
01:27:25.135 --> 01:27:26.415 into your question. I'm drawing
NOTE Confidence: 0.978147
01:27:26.415 --> 01:27:27.934 my poor friend into my,
NOTE Confidence: 0.978147
01:27:28.175 --> 01:27:29.295 you know, spiel, which he
NOTE Confidence: 0.978147
01:27:29.295 --> 01:27:30.735 doesn't necessarily wanna go with.
NOTE Confidence: 0.978147
01:27:30.735 --> 01:27:30.974 But,
NOTE Confidence: 0.90093553
01:27:31.775 --> 01:27:32.014 but,
NOTE Confidence: 0.98734003
01:27:33.380 --> 01:27:34.179 but I think the answer
NOTE Confidence: 0.98734003
01:27:34.179 --> 01:27:35.540 is yes, actually. There are
NOTE Confidence: 0.98734003
01:27:35.540 --> 01:27:36.840 ways that you could organize,
NOTE Confidence: 0.9997162
01:27:38.659 --> 01:27:39.159 work
NOTE Confidence: 0.956704
01:27:39.460 --> 01:27:39.960 assignments,
NOTE Confidence: 0.9995677
01:27:41.380 --> 01:27:42.760 that could either degrade
NOTE Confidence: 0.9984096
01:27:43.060 --> 01:27:45.255 or support the kinds of
NOTE Confidence: 0.9984096
01:27:45.495 --> 01:27:46.614 commitments that you might wish
NOTE Confidence: 0.9984096

01:27:46.614 --> 01:27:47.114 to,
NOTE Confidence: 0.910586

01:27:47.574 --> 01:27:49.255 support in in the training
NOTE Confidence: 0.910586

01:27:49.255 --> 01:27:50.695 of young physicians. Did I
NOTE Confidence: 0.910586

01:27:50.695 --> 01:27:51.975 remotely answer your question? Yeah.
NOTE Confidence: 0.910586

01:27:51.975 --> 01:27:53.755 Five four. Thanks. Yeah. So
NOTE Confidence: 0.90306926

01:27:54.775 --> 01:27:55.995 I wish we could
NOTE Confidence: 0.94140375

01:27:57.014 --> 01:27:57.895 I really wish we could
NOTE Confidence: 0.94140375

01:27:57.895 --> 01:27:59.255 con continue all night, but
NOTE Confidence: 0.94140375

01:27:59.255 --> 01:28:00.455 we we do wanna be
NOTE Confidence: 0.94140375

01:28:00.455 --> 01:28:00.955 rigidly
NOTE Confidence: 0.8514276

01:28:01.470 --> 01:28:03.229 adherent to our time unless
NOTE Confidence: 0.8514276

01:28:03.229 --> 01:28:04.670 we wanna respect people's time.
NOTE Confidence: 0.8514276

01:28:04.670 --> 01:28:05.470 Thank you so much for
NOTE Confidence: 0.8514276

01:28:05.470 --> 01:28:06.270 coming, and and thank you,
NOTE Confidence: 0.8514276

01:28:06.270 --> 01:28:07.150 Doctor. Kasai. So much. It
NOTE Confidence: 0.8514276

01:28:07.150 --> 01:28:08.689 was a real contest.

NOTE Confidence: 0.98002446

01:28:09.870 --> 01:28:11.250 Thank you for having me.