1

00:00:00,000 --> 00:00:06,589

Why is it that we need a scientific

method in order to understand how the

2

00:00:06,589 --> 00:00:14,580

world works. When you think about the

ways that humans across the world differ

3

00:00:14,580 --> 00:00:21,890

and disagree. It is remarkable to

contemplate the one area in which the

4

00:00:21,890 --> 00:00:29,380

world agrees. In the endeavor of science,

the scientific method is the only way,

5

00:00:29,380 --> 00:00:37,730

not depending on culture or context

or time. That humans have found a way,

6

00:00:37,730 --> 00:00:45,180

to approach the truth of how things

happen in the biological and scientific

7

00:00:45,180 --> 00:00:54,199

world. But why do we need this scientific

Method? Well we are evolved creatures.

8

00:00:54,199 --> 00:00:58,570

And as such our goal is to survive.

9

00:00:59,840 --> 00:01:09,320

Let's take an example. On the savannas of

Africa our ancestors roamed. If they had

10

00:01:09,320 --> 00:01:12,840

heard some wrestling in the bushes over

there,

11

00:01:13,369 --> 00:01:20,939

the point would be to satisfy the curiosity of

what that is without endangering humans.

12

00:01:20,939 --> 00:01:28,650

So humans find curiosities satisfiers.

Now these can be right or these can be

13

00:01:28,650 --> 00:01:34,509

wrong but the point is, is that the

humans survive. They don't necessarily

14

00:01:34,509 --> 00:01:40,790

know what causes that wrestling, but

they've satisfied their curiosity and

15

00:01:40,790 --> 00:01:48,200

they're safe. With the formation of

agriculture and civilization we now

16

00:01:48,200 --> 00:01:59,619

have a safe place to explore human

curiosity and find those answers. So we

17

00:01:59,619 --> 00:02:07,369

need to overcome our evolutionary

shortcomings in order to get to the real

18

00:02:07,369 --> 00:02:09,670

answers.

19

00:02:09,670 --> 00:02:11,990

Let's take a few examples

20

00:02:11,990 --> 00:02:21,040

of how the human brain doesn't function

maybe as perfectly as we imagine. Here's

21

00:02:21,040 --> 00:02:28,140

an example if I say that the cat ate the \_\_\_\_\_\_\_

your brain has jumped already to the

22

00:02:28,140 --> 00:02:33,690

conclusion that the last word in that

sentence is rat. Humans jump to

23

00:02:33,690 --> 00:02:40,900

Conclusions. You've all seen the face vase,

 pictures you can see one or

24

00:02:40,900 --> 00:02:47,520

you can see the other but you can't

comprehend both at once. In physical

25

00:02:47,520 --> 00:02:54,790

terms we see with a tiny bit of the

electromagnetic spectrum we hear what we

26

00:02:54,790 --> 00:03:02,320

hear in the audible range. We are

fallible creatures. We are storytellers

27

00:03:02,320 --> 00:03:09,590

and what we need is a method that allows

us to move beyond these limitations

28

00:03:09,590 --> 00:03:19,690

imposed by our survival history, into

generating actual repeatable factual

29

00:03:19,690 --> 00:03:24,810

testable methods of understanding the

world and that's what the scientific

30

00:03:24,810 --> 00:03:35,930

method provides for us. It also provides

a kind of wonderful sense of doubt and

31

00:03:35,930 --> 00:03:45,530

questioning. As a scientist we know what

we don't know and we have to be ready to

32

00:03:45,530 --> 00:03:53,590

give up our most cherished kinds of

thoughts and beliefs as it were. In order

33

00:03:53,590 --> 00:04:00,620

to accommodate when science moves past

those points. It's happened to me a lot

34

00:04:00,620 --> 00:04:08,209

in my life I think of the years that I

taught students about how cells divide

35

00:04:08,209 --> 00:04:15,530

in adult organisms make skin cells

all the time our livers only divide

36

00:04:15,530 --> 00:04:20,180

those cells only divide when they're

damaged but our brain cells don't divide.

37

00:04:20,180 --> 00:04:25,510

I taught that for years until about 10 years

ago when they showed

38

00:04:25,510 --> 00:04:31,380

it was completely wrong and lots of our

brain cells do divide after our brains

39

00:04:31,380 --> 00:04:38,820

are fully formed. And having those

cherished notions, those things we

40

00:04:38,820 --> 00:04:44,580

thought for sure we're right pulled out

from under us doesn't have to be

41

00:04:44,580 --> 00:04:54,260

anything other than a joyous kind of

recognition that we know so little. I'm

42

00:04:54,260 --> 00:04:59,840

reminded of what my mother taught me

long ago and that was that a wise man

43

00:04:59,840 --> 00:05:01,130

knows what he doesn't know.