From: Seth Lloyd <█████████████>
    To: "jeffrey E." <jeevacation@gmail.com>
Subject: Re:
    Date: Wed, 10 Aug 2016 00:08:02 +0000

Dear Jeffrey,

It was very fun talking with you the weekend before last.   I have downloaded The Improvement of the Mind and am reading. I feel my mind improving already ;-)

The conversation and your ideas fit in closely with work I've been doing and am proposing
to do.   Maybe this is not surprising because we've been talking about
these topics for years.   I've been traveling around (Santa Fe, now
in San Francisco, soon to be in Banff) and so have had time to think
more about what we discussed.

Here is a succinct summary of my own take.   I know yours is somewhat
different.

Information is a fundamental quantity, measured in bits.

Information can be random, like the typical string of bits
one gets by flipping a coin   0101110110101000011
(I just flipped a coin and let heads = 1 and tails = 0),
or it can be ordered, like the bit string 0000000000000000.

There is a technical definition of order and randomness: a bit string
is ordered if there is a succinctly describable method, e.g.,
a short computer program, for producing it.   By contrast,
a string is random if the shortest program for producing it
is the same length as the string itself. For example, the
string consisting of a billion 0's can be produced by a short
program: Print `0' 10^9 times.   By contrast, the shortest
program to produce the string 0101110110101000011 is something
like: Print 0101110110101000011.   This way of defining
order/randomness is called algorithmic information.

The interesting thing about algorithmic information is that
the short program can be hard to find.   A string can look
very random and still have a short program.   For example,
the first billion bits of pi, written in binary, have a short
program, but if I just give you those bits, they would look
statistically random.

This means that so far as we or any other information processing
system is concerned, order/randomness is subjective: some information
can be ordered and non-random, but we may not be able to recognize
the underlying order, so we treat it as random. That is, the order
is cryptic: we don't know how to decode it.   This crypticity is
the key feature for looking at both physical systems and human/social

systems.

Physical systems:

In physical systems such as a gas of molecules, entropy is the amount of information that is required to describe the underlying motions of those molecules. Because the molecules are bouncing off each other in an essentially random way, entropy is assumed to be random information.

Heat is energy that is encumbered by entropy/randomness. The randomness makes it harder to take advantage of that energy.

By contrast, free energy is energy where the information required to describe how that energy is arranged is ordered, not random. Free energy is energy we can take advantage of.

Now comes the kicker: suppose that a system is actually ordered, but that order is cryptic. If we can't decipher the order, we can't take advantage of it.

So whether energy is free or not depends on our ability to detect its underlying order. That is, the availability of energy depends on the computationall/decrypting ability of whatever system (molecule, microbe, human) is trying to take advantage of that energy.

Social/human interactions:

Human interactions are about the exchange of information, plus other stuff (goods, services, money, etc.). Everything that is exchanged brings with it the information that describes what is exchanged, what can be done with it, etc. So for example, a US Treasury bond comes with the specification of its price and its future interest payments. A complex option comes with the specification of what can be bought and sold when.

As a result, human interactions are awash in information. Different people are capable of decoding/decyphering that information in different ways. The ability to detect a pattern or order in information translates into the ability to take advantage of a social situation. For example, the efficient market hypothesis states that fluctuations in the prices of a given stock should be essentially random. But if you happen to possess some information that allows you to predice the future fluctuations of the stock, then you can make money.

Similarly, to play into you ideas about deception, when two actors enter into a transaction, each presents the other with information about their obligations under the transaction. Each actor looks at that information and judges whether the transaction will turn out to their own advantage. But because each actor perceives different patterns in the information, they can come up with different evaluations of the future worth of the transaction.

Deception arises because one actor may hide a pattern in the revealed information, a pattern that the other actor doesn't perceive, but that makes the transaction more advantageous to the first actor. I've been told that this is called, doing business.

Talk some more?

Yours,
Seth

P.S. I'm sending more on this plus information on how your gifts to my work over the last four years have been used.

On Sun, Jul 31, 2016 at 11:26 AM, jeffrey E. <jeevacation@gmail.com> wrote:
> Power, financial , physical , and its signaling
> Deception
> Probability
> music
> money
> distributions . derivation of the power law
> MOBJECTS
>
> On Sun, Jul 31, 2016 at 11:10 AM, Seth Lloyd <███████████> wrote:
>> Absolutely: call me on my cell ████████████
>>
>> Seth
>>
>> On Sun, Jul 31, 2016 at 11:02 AM, jeffrey E. <jeevacation@gmail.com> wrote:
>>> is now a good time to speak?
>>>
>>> On Sun, Jul 31, 2016 at 10:57 AM, Seth Lloyd <███████████> wrote:
>>>> Dear Jeffrey,
>>>>
>>>> You have generously supported my research the last few years. The most recent $100K you donated two
>>>> years ago was supremely useful: because of the lack of restrictions on the gift, I was able to support visitors,
>>>> students, and activities that can't be supported by government grants.
>>>>
>>>> I'm writing to see if you are interested in continuing the support.   If you could support the research, that would be great.
>>>> In addition to looking for research support, I'm also looking for ways to support a sabbatical for the academic
>>>> year 2017-2018 (MIT only pays half my salary for the year).
>>>>
>>>> We have also talked about me checking out MIT's willingness to accept additional donations from you: would you like me to ask around?
>>>>
>>>> Once again, thank you so much for your support: as noted, it is exceptionally effective, and it means a lot
>>>> to me.   Please give me a ring if you'd like to discuss this: ██████████████

I hope that you are well and that our paths cross soon.   Any plans to show up in Cambridge?   The last time was very fun.

Yours,
Seth

On Sun, Feb 7, 2016 at 11:22 AM, jeffrey E. <jeevacation@gmail.com> wrote:
greatgreat

On Sun, Feb 7, 2016 at 11:21 AM, Seth Lloyd <███████████> wrote:
That would be great!   I can make it.

Seth

On Sun, Feb 7, 2016 at 10:10 AM, Joscha Bach <████████████████> wrote:
yes!

Am 07.02.2016 um 10:08 schrieb jeffrey E. <jeevacation@gmail.com>:

I can be at the insitute at 3 today if that works for you all
        please note
The information contained in this communication is
confidential, may be attorney-client privileged, may
constitute inside information, and is intended only for
the use of the addressee. It is the property of
JEE
Unauthorized use, disclosure or copying of this
communication or any part thereof is strictly prohibited
and may be unlawful. If you have received this
communication in error, please notify us immediately by
return e-mail or by e-mail to jeevacation@gmail.com, and
destroy this communication and all copies thereof,
including all attachments. copyright -all rights reserved

--
        please note
The information contained in this communication is
confidential, may be attorney-client privileged, may
constitute inside information, and is intended only for
the use of the addressee. It is the property of
JEE
Unauthorized use, disclosure or copying of this
communication or any part thereof is strictly prohibited
and may be unlawful. If you have received this
communication in error, please notify us immediately by
return e-mail or by e-mail to jeevacation@gmail.com, and

destroy this communication and all copies thereof,
including all attachments. copyright -all rights reserved

--
    please note
The information contained in this communication is
confidential, may be attorney-client privileged, may
constitute inside information, and is intended only for
the use of the addressee. It is the property of
JEE
Unauthorized use, disclosure or copying of this
communication or any part thereof is strictly prohibited
and may be unlawful. If you have received this
communication in error, please notify us immediately by
return e-mail or by e-mail to jeevacation@gmail.com, and
destroy this communication and all copies thereof,
including all attachments. copyright -all rights reserved

--
    please note
The information contained in this communication is
confidential, may be attorney-client privileged, may
constitute inside information, and is intended only for
the use of the addressee. It is the property of
JEE
Unauthorized use, disclosure or copying of this
communication or any part thereof is strictly prohibited
and may be unlawful. If you have received this
communication in error, please notify us immediately by
return e-mail or by e-mail to jeevacation@gmail.com, and
destroy this communication and all copies thereof,
including all attachments. copyright -all rights reserved

EFTA00821829