conjecture,   probability is a =orce.
</=iv>

I do not understand =orces as primitives, or atomic properties. How do you envision =t?

I imagine the universe as a =ausally closed machine that can be described on a lowest level with a =et of simple, uniform rules. The primary data structure can be a =ypergraph, i.e. a set of locations that are connected with shared, =yped properties. All changes in the universe can be described using =raph rewriting rules.

The =ules could in principle either be deterministic, like in a cellular =utomaton, or probabilistic, like in a Markov model. However, our =niverse seems to preserve the amount of information in it, as suggested =y the first law of thermodynamics, which makes it likely that all =ransitions are reversible (i.e. each state has exactly one preceding =tate; if a state had two or more possible precedents, we would =ffectively delete bits). The most elegant universe seems to be =eterministic, with all probabilistic effects at the lowest level being =seudorandom (many cellular automata have that property). A =robabilistic universe seems possible, too, but I do not understand the =oops I would have to make it jump through so it gives rise to the =pparent preservation of information.

The universe contains hierarchies of causal =ystems. A causal system is one that can be described independently of =he underlying dynamics, as long as those remain within certain bounds. =or example, I can talk about tomorrow's weather, unless the planet is =eing hit by an asteroid, I can talk about the program running on my =omputer, unless the processor overheats or the power runs =ut.

Causal systems require that I =an identify conditional state transitions, and there are mechanisms =cting on the underlying dynamics the constrain the state =pace.

As soon as we leave the =lementary level of the universe and look at a higher causal level, =here is a possibility that the underlying dynamics leave the region of =heir state space that enables the higher causal level. There is always = non-zero probability that my computer fails, my monetary system breaks =own etc.

An additional =omplication is that we cannot observe the elementary level. We only get =o see patterns at high causal levels and infer everything else in a =ind of machine learning process using a combination of approximately =robabilistic models and symbolic =easoning.

        - it is the underlying =orce for self organizing =ystems.
=/div>

Would that not =e evolution? I.e. those systems that self-organize in unstable ways die =ff to be replaced by fitter systems, as long as there is an entropy =radient that can feed any self-organizing system at all?

I wonder if it makes sense to hire an animator to =llustrate how elementary Hamiltonian dynamics in a deterministic =niverse can give rise to entropy gradients if we (at least =emporarily) open the universe, and how this makes the formation of =table objects and self-organizing systems possible for a short while. I =hink that I can see it

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clearly, but it seems to be so hard to convey in =ords, how we are temporary encrustations, molded by the forces of =volution, on the tides of entropy of the universe.

most =raits fall on a distribution curve.   it is not useful =o talk about a point on the curve.   it is only the =urve that gives you information.

I agree, our brains swim =n a sea of probabilities. However, we have to work with very little =ata, because life is short, and our senses are very limited. I estimate =hat a proper Bayesian analysis is possible for low level perceptual =ata (which are highly repetitive after all), but not for the complex =igh-level machinery of the world, so when we try to understand money, =ower, etc., we switch from probabilistic models to causal narratives. =or instance, Gigerenzer has shown that people tend to have difficulty =t intuitively combining probabilities of the influences differ by an =rder of magnitude or more, so paradoxically, people often make better =ecisions when they have less knowledge ("have I ever heard of a =hing" is a good heuristics for the significance of a thing only =hen we know little about a domain).

if i tell this person is a male of =8 years old. .   it leads me to nbelive that you are =omewhere between 4foot 5 and 7 foot 10   =   I can say no more (ala =ittgenstein).   it makes no sense to say =therwise. .

Epistemology vs. ontology. The =ormer tells me what I can know about the world, and you are of course =orrect with the above. The second is how I model it, and a model that =ssigns a definite height with a less definite confidence seems to work =etter than one that assumes that my height is somehow a probability =istribution. So, your measurements narrow a probability distribution, =ut the assumption that I have a definite height comes down to the claim =hat subsequent measurements will improve your model towards a global =ptimum. This is a testable hypothesis!

the distributions are relatively constant.   =n a popualtion.   if one individual moves either =p or down. it is most likely that another has the opposite =ove keeping the distribution =onstant.

Yes, it is not =ausal though, unless the probabilities are not independent! If I roll a =ix, the next throw still has a probability of 1/6 for rolling another =.

even making you happier means someone else =ust get sadder

(Aside: happiness is not a zero-sum =ame. Most people get happier if they can contribute to the happiness of =thers they value.)

evolution works predominiately on =he points on the curve.   it is the activitiy ON the =urve.

Evolution also creates entirely new curves (IQ =id not exist before organisms mutated some fat cells into a nervous =ystem). And individuals sometimes do matter (Genghis Khan is said to =ave fathered thousands of babies).

shifting the points =ocations.   the curve may chage over a time =eriod .
averages height moves =p,   average intellegvine moves up

(Homo sapiens seems to have lost IQ several =imes during its evolution, perhaps because smarter individuals have =igher relative cost of rising children due to lost opportunity. And =onogamy means that almost everybody has a shot at reproduction, so =enetic drift should be huge.)

The focus on the indivdual is the weak =ink   how do I get happy,   is asking =ow do i move up the curve , but just as statistical =echanics says little if nothing about a single particle =

Exactly! I cannot move up the curve directly, =ecause the curve is a statistical model, not a causal mechanism. To get =ore happy, more wealthy or more tall, I need to identify a causal =echanism to do so. I cannot travel by looking at a map, I have to find = way to locomote.

but we can say much about the group.   biology may =resent a similar issue

=ootnote   , It is my view that gravity is only a result =f probabililty . it is not a force. but a =seudo =orce.

Physics mostly sees it as spacetime curvature. In =y mind, space does not really exist, there is only an incredibly dense =etwork of paths in a graph. Around objects, the paths are much denser, =o superficially, if you move in a straight line near an object, the =robability to move toward the object is much higher than the =robability of moving away from it. However, there is more to it, =ecause the paths evolve (change) in 4D, and as a result, are not a =andom jumble, but probably relatively (but not perfectly) well =rdered.

Seeing gravity as =urvature (i.e. a pseudo force) works well, but it works for the other =orces, too. All forces are essentially regular deviations for how =ertain types of information travel through the universe graph, and =articles are types of patterns of traveling deviations. So, in my =urrent view, all forces are pseudo forces, and all particles are pseudo =articles.

In my mind, the =niverse looks like a data structure in a giant computer that is ticking =orward step by step, thereby creating all the dynamics that we observe, =ith the added complication that we can never access the absolute =alues, but only the relative differentials of things we are entangled =ith. Observers are causal systems that are complex enough do form and =anipulate memories (i.e. computers) that are parasitic on the =omputations of the universe computer in much the same way as water =ortices are parasitic on the fluid dynamics of a river. For an =bserver, nothing can be absolute. For instance, time is the difference =n the rate of change of an observing computer in relation to the rate =f change in its immediate environment, which happens to depend on the =peed with which the computer moves through that environment. Spin is =he difference in spin of a part of the computer to what it gets in =ouch with, etc.

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=   like spinning a stone on a string over your =ead,   it creates a pseudo force on the string (=entrifigal).   we are fooled into thinking =therwise.   .   simple =uestion

why if i throw a fair =oin. many many times will the heads and tails =ventually come up in equal numbers. . =robaablity forces it into a 50/50 ratio over time. and is =uaranteed in infinite time . but says nothing about each =hrow. the coin thinks it has free will.   but obviously =t doesnt.   it beleives that it can be either heads or =ails. it can but it operates under the mysterious force of =robabilty

gravity can be =easured , but no reason for its existence makes =ense.

I really =ike your self organzing intelligence module =dea.   I think it is only an outcome of =robability.   modules

on a =rain issue,   I belive that this has led to the formation of =hat i have referred to as MOBJECTS .   " mental objects. " =nbsp;   your layers generate =roabilities and the more time they take to develop arguably the =ore accurate the curve

Yes, that is correct. The brain forms layers of =xtremely primitive mobjects, which is combines into more complex =objects, and which it can later evoke (imagine) at will to explore =ossible worlds/hypothetical outcomes. The mobjects are formed by =athering the structural probabilities of occurrences of patterns into =ierarchical functions. Sometimes there is little discernible =ifference, like in the coin throw, sometimes the coin falls almost =lways on the same side, as in the laws of perspective, gravity or =ighting, or in a language that we learn. Mobjects are generated by =odular function approximators that describe =robabilities.

On Sat, =ul 23, 2016 at 3:12 AM, Joscha Bach █████████████████ wrote:

Yes, the principles =re Bayesian, I suspect. Water is a good, hard problem.
Unrelated, I will very much miss the opportunity to teach at MIT, which =elped to develop ideas and recruit students, but I should use the =pportunity to get long uninterrupted stretches for writing.

> On Jul 21, 2016, at 20:31, jeffrey E. <jeevacation@gmail.com> wrote:
>
> I like the idea of a self organizing system of intelligence. =   feedback. I suggest you focus on natural =onstraints.   proerties of water. ? for =xample. . probabilty theory, distributions of power =aws and their derivations.   etc.
>
> --
>   please note
> The information contained in this communication is
> confidential, may be attorney-client privileged, may
> constitute inside information, and is intended only for

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