**From:** J <jeevacation@gmail.com>
**To:** Joscha Bach <[redacted]>
**Subject:** Re:
**Date:** Mon, 31 Dec 2018 17:46:35 +0000
**Inline-Images:** usa.gif

---

i think we agree , on most of that except for the proposition that all models need language. forces for example or not a language . . fields are not in and of themselves languages. . meaning , definitley not. . mood. / its the non formal that is more interesting. all else is merely a product ( albeit interesting in many regards ) of your basic constructs.

On Mon, Dec 31, 2018 at 11:54 AM Joscha Bach <[redacted]> wrote:

> This is the solution of the TSP for all towns of the US that have more than 500 residents:
>
> The fact that TSP is NP hard does not mean that it cannot be approximated efficiently, and even solved for most practical cases. Amoebas and many other biological systems can often implement a parallel graph traversal that gives a good enough solution for a TSP like problem. However, approximate solutions to TSP cannot usually mapped to solutions to other NP hard problems (i.e. crypto).
>
> I suspect that we are not on the same page wrt the nature and scope of computation.
>
> The way I see it, mathematics is the domain of all languages. All modeling takes place in a language, so modeling (including thinking, which is a kind of modeling) is a subset of mathematics. "Classical mathematics" is a branch of math that has "time-less" semantics, i.e. the mapping between the a statements and its semantics (for instance, the axioms that a statement can be reduced to in a proof) can take an arbitrary number of steps, including infinitely many. Gödel could show that if we allow self referential statements, we cannot always guarantee that the proof does not lead to contradictions and the semantics of the statement become undecidable. Turing generalized Gödel's idea and demonstrated that the problem crops up once the proof can have infinitely many steps, i.e. a machine that performs the proof is not guaranteed to terminate its execution.
>
> These problems at the foundations of classical mathematics disappear once we switch to constructive mathematics. We can recover the functionality of classical mathematics (like geometry, real numbers and continuous transitions) by replacing all entities that require infinite numbers of steps to generate by generator functions, and distinguish between values and functions. Evaluating a function comes at a cost that is being left to the one that wants to determine an approximate value.
>
> Constructive mathematics and computation are the same thing. In computation, performing a transformation in a language comes at a non-zero cost, and infinite-cost transitions cannot be made.
>
> My proposal is simply that the languages in which we describe our observations at the foundational level should be computational. (Constructive math is the subset of math that works, and modeling and thinking are subsets of constructive math.)
>
> I found that many mathematicians (including Hilbert) have been constructivists for a long time, because they were aware of the implications of Gödel's proof and how to deal with it. Chaitin and others have since done a lot of work in exploring the equivalence of computation and "math that works". In my view, mathematics is a code library for thinking, with a bug that was discovered and resolved in the first half of the last century.

However, most physicists are using that code library without being aware of that bug and its resolution, which may have contributed to the issues in foundational physics that prevent physicists from solving the puzzle.

Our human minds seem to have two separate modeling systems: one is perceptual, and it optimizes for coherence, i.e. consistency with the sensory input and within the model that predicts the sensory input. We are always in a possible universe, where possible refers to a state in which all the present perceptual elements are compatible with each other.
Reasoning is a separate system that repairs perception, whenever the perception is inconsistent. Reasoning optimizes for truth, i.e. some kind of proof, which is more narrow than coherence. (The perceptual system does not spell out its axioms.) Mathematics formalizes subsets or reasoning and perception in ways that always allows proofs, usually at the cost of using a discrete low dimensional modeling language. When we talk about things like "culture", we tend to use language where the symbols are less narrowly defined. Wittgenstein's project was to fix that by recovering a semantics of natural language that is amenable to proof. By his own estimate, he did not succeed. Marvin had the same goal, and I think he did try until the end. The solution might be to give up on natural language as the primary carrier of thought, and use a perceptual language instead, upon which we anchor the natural language as a tool for disambiguation.

Let me know when there is a good time for skype.

J

On Dec 30, 2018, at 07:40, J <jeevacation@gmail.com> wrote:

as the traveling salesman is np does the ameoba still compute???? or do you assume solving a problem , is always a computation. ? is kissing someone a computation? does computation always involve measurement? . is perception a computation , or is thougt a computation.? is culture a computation. ? Im begining to think that the things that we cant measure are subject to different rules

On Sun, Dec 30, 2018 at 7:29 AM Joscha Bach <[redacted]> wrote:
Sure! Will be back late tonight. Tomorrow?

Am 30.12.2018 um 13:22 schrieb J <jeevacation@gmail.com>:

ok skype me when you have time.

On Sun, Dec 30, 2018 at 7:21 AM Joscha Bach <[redacted]> wrote:
On the way back from Germany to Boston (was here for three days to give an invited talk at the Chaos Communication Congress).

Am 30.12.2018 um 12:18 schrieb J <jeevacation@gmail.com>:

where are you?

On Sun, Dec 30, 2018 at 6:07 AM Joscha Bach <[redacted]> wrote:
This year's installment of the Computation to Consciousness series.

Thank you!

Joscha

Am 30.12.2018 um 00:16 schrieb J <jeevacation@gmail.com>:

https://www.popularmechanics.com/science/math/a25686417/amoeba-math/

--



--

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