

# On the hard problem of consciousness, how this relates to decisions in string theory, using Anti – information

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(and other unfinished courses!)*

## Abstract

*From previous papers - there may be variables affecting the physical universe. Such as decisions (D), awareness (C) etc. Here I would like to relate the hard problem of consciousness to Anti – Information and its analogue entropy. Tying all the ideas in this and previous papers is difficult. Essentially inverses (dualities etc) are important. These are all related to structure.*

*The choice function :*

$$B = B(t)$$

*Where super and subscripts can be used to remove/add variables etc is analogous to the other one:*

$$E = E(t)$$

*The mathematics is very simple so that a Neuroscientist with basic knowledge of physics could comprehend.*

*There are paradoxes involved and such contradictions should be investigated. Again the author is not aware of all implications but hopes this article is fruitful. N.B in the last paper the author forgot to write:*

$$[E - B] = x$$

*s.t*

$$[E - B] \frac{1}{x} = 1$$

*Where:*

$$\frac{1}{x} \rightarrow \frac{hc}{x} = E_k$$

*s.t*

$$[E - B]E_k = 1$$

## Introduction

There may be 'hidden' variables in the mathematical notation of the universe. In this and other papers we have the following.

P = Physical reality

I = logical space

C = Awareness

D = decisions

The list may continue. Please note the decision term  $\mu$  in previous papers may or may not equate to D.

Thus we have functions of these:

$$\forall\{P, I, C, D, A \dots\}$$

Now Anti – Information is described as :

$$A = \text{Information} - \text{logic}.$$

Using the choice function  $B = B(t)$

$$A = X - BX$$

This produces a parallel to entropy.

$$dS = \forall(X - BX)/X'$$

It appears that energy, force and structure, logic etc are related. The following are some ideas, flawed or not.

Results:

From thermodynamics we have the relation for entropy:

$$E = T ds$$

(N.B the E here is energy not the choice function).Now:

$$dS = \frac{x - Bx}{x'} = \frac{E}{T} = \frac{mc^2}{T}?$$

Anti information is defined as:

$$x - Bx = A$$

$$dS = \frac{A}{x}$$

From previous articles.

$$dS = \frac{f(x) - B f(x)}{g(x)}$$

If we assume information  $I'$

Can describe every event:

$$I' = \text{physical reality} + \text{logic}$$

Now:

$$P = A = \text{information} - \text{logic}$$

Anti – information A is defined as Entropy x length.

$$dS = \frac{A}{x}$$

Then

$$P = A = x dS = \frac{x E}{T} = (x m c^2) / T$$

But

$$\text{Work} = F x \rightarrow x = \frac{W}{F}$$

Equate work and temperature

$$W - BW = T$$

Thus

$$P = \frac{m c^2}{F}$$

If we say that the physical universe P has a structure then:

$$\text{Structure} = P = \frac{\text{Energy}}{\text{Force}}$$

s.t the duality

$$A = \text{Structure} = P \text{ ( a possible contradiction using A)}$$

Using the assumption, involving the converse to I'

$$\text{Information} = \text{Physical reality} - \text{Logic}$$

$$I' = P - L$$

N.B minus sign. Thus if the entire system is chaotic:

$$A = P + L$$

That is disorder A encompasses the order of the entire system.

Now A=A so:

$$P + L = P - L$$

Or:

$$\text{Logic} = -\text{Logic}$$

$$Bx = -Bx$$

But this can only occur when logic = 0. Unless we write:

$$B_1 x = - B_2 x$$

Thus:

$$A = x - 0 x = x$$

Using

$$\frac{x - 0 x}{x'} = \frac{mc^2}{T} = \frac{x}{x'}$$

We have

$$m = \frac{xT}{x'c^2}$$

Setting:

$$P = x'$$

$$m = \frac{xT}{Pc^2}$$

And:

$$P = \frac{xT}{mc^2}$$

Let :

$$T = W - BW$$

$$P = \frac{xW}{mc^2} = x \frac{T}{E}$$

Using:

$$\frac{1}{dS} = \frac{T}{E}$$

$$P = x \frac{1}{dS} = \frac{x(x')}{x - Bx}$$

Now:

$$dS = \gamma \frac{x-Bx}{x'}$$

And assuming:

$$P = I^{-1}$$

That is :

$$I = \gamma(P^{-1}) = \left( \frac{x - Bx}{xx'} \right) = P^{-1} = \frac{dS}{x}$$

Using

$$L = -L = 0$$

Where

$$L = Bx \rightarrow \text{the right choice}$$

$$I = (x - 0x) \gamma xx' = \frac{1}{x'}$$

Showing that converses/ dualities are crucial in structure. Now that consciousness is a succession of structures, which are logically related. Write:

$$C \rightarrow A \rightarrow A^{-1} = \text{structure}$$

Then decisions are choices. Here decisions can be defined in two ways, the reason depending on calculating actual values:

If we let  $D=0$  for complete knowledge  $B=1$  then

$$D = C - BC = 0$$

Or:

$$\text{for } B = 1, \quad D = C - (1 - B)C$$

And:

$$D = C$$

The results can be found similarly for zero knowledge  $B=0$

Decisions may be the exact definition of order:

$$D = A^{-1} = L = \text{Logic}$$

$$D = \forall\{p, I, C, D.. \}(B x)$$

But logic can be defined as structure:

$$D = B C = \text{logic} = L = \text{structure}$$

And from before:

$$B C = \text{structure} = \frac{E}{F} = \frac{\text{Energy}}{\text{force}}$$

Thus

$$C = \frac{E}{BF}$$

Or perhaps:

$$C = \frac{E}{(1-B)F}$$

Supplying a reason that the mind can control the body. Here the correct definition must be discerned out of the two equations for C. NB the possible infinite values for C for values of B. Here:

$$\text{Structure} = P = A^{-1} = \frac{1}{Bx} = L^{-1}$$

And:

$$D^{-1} = L^{-1}$$

So if:

$$\text{structure} = BC \text{ then } \frac{1}{BC} = L^{-1}$$

If:

$$B \rightarrow 0 \text{ then } L = 0 (\text{choice} = \text{logic})$$

Thus:

$$P = \frac{1}{BC}$$

$$C = \frac{E}{BF} = \frac{\text{structure}}{B}$$

$$\text{structure} = \frac{E}{BF}$$

Defining:

$$\frac{B_1 C E}{F} = \frac{E}{B_2 F}$$

Gives:

$$C = \frac{1}{B_1 B_2}$$

St B is applied twice. As B can be applied multiple times this is a succession of choices.

Now:

$$A = \frac{1}{B x} = x - Bx$$

s.t

$$Bx^2 - B B x^2 = I$$

Or:

$$I = x B (x - Bx) = xBA$$

So we can choose from disorder (Anti – Information = A)

Now summing all disorder may give awareness.

$$C = \Sigma A$$

We also have:

$$(B_{i+1} C E_{i+1}) / (F_{i+1}) = \frac{B_i C E_i}{F_i}$$

Now using defn of A:

$$A = f(x) - B f(x)$$

We can write:

$$\frac{CE}{F} - B \frac{CE}{F} = A$$

For unique B.

$$dS = \frac{A}{x} \Rightarrow A = dS \cdot x$$

$$\text{Thus: } dS = \frac{CE}{Fx} - B \frac{CE}{Fx}$$

But :

$$W = Fx$$

And

$$dS = C - BC = \text{disorder} = A$$

But:

$$BC = \text{Logic}$$

And decisions can be defined as:

$$D = C - BC$$

Or

$$D = C - (1 - B)C$$

Perhaps other functions  $f \rightarrow C$

This gives an account of how consciousness  $C$  can be defined, and perhaps with further work – calculated.

Conclusion:

These relationships may be tenuous or flawed. The infinite values for consciousness would require moderation. Perhaps earlier work could be used to reduce infinite changes to the decision term  $\mu$ . That hidden variables exist is purely speculation. The awareness of particles, to produce uncertainty in momenta and position could be united here. The domain  $\{I, P, C, D, A \dots\}$  may be such that logical is physical and vice versa. Combining the hard problem of consciousness with quantum gravity / string theory is truly a theory of everything. The author hopes others will untangle these ideas and find a simple, elegant and comprehensible account of how the universe and perhaps the multi – verse works. Obviously the main reason for the mathematical nature of physics is calculation thus a well endowed theory will provide for calculation and coincide with tested calculations from experiment.

## References

Susskind, L. All Stanford lectures quantum mechanics.

Wikipedia., Temperature, work and entropy.

The references are limited as the work is original.